VISUAL REVIEW | Vol. 18, No. 1, 2026 | ISSN 2695-9631
International Visual Culture Review / Revista Internacional de Cultura Visual
https://doi.org/10.62161/revvisual.v18.6036

SCIENCE COMMUNICATION FOR YOUTH: RTVE IN THE AGE OF RAPID ATTENTION
Case study of 'Órbita Laika'

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KEYWORDS
Young audiences
RTVE
Scientific content
Social media
Media literacy
Generation Z

ABSTRACT
This article examines the lack of connection between 'Órbita Laika' (RTVE) and young audiences, focusing on its digital communication strategy on TikTok and Instagram. A content analysis and a digital ethnography reveal limited adaptation to platform dynamics, relying mainly on a linear television format, and showing low interactivity, and minimal reach. This results in a residual "ghost state" presence. These shortcomings reduce dissemination potential and hinder dialogue with Generation Z. Findings highlight the urgent need for a comprehensive renewal of the programme's format and a participatory cross-platform strategy prioritising entertainment, short-form science communication, and interactive engagement to reinforce relevance, visibility and media literacy among younger audiences in today's rapidly evolving attention economy.

Received: 15/ 09 / 2025
Accepted: 28/ 10 / 2025

1. Introduction

In the digital age, the relationship between young audiences and scientific content has undergone a major transformation. Access to information has evolved towards streaming platforms, social media, and linear television, shaping a diverse media ecosystem where young people consume content in fragmented, visually appealing, and highly interactive formats (Adami, 2022). This media environment not only changes consumption habits, but also the way young people relate to scientific knowledge and the institutional sources of that knowledge.

RTVE is a public service media outlet in Spain that faces the challenge of adapting to new dynamics of consumption and participation based on user needs (Shishkin et al., 2023). In this article, the research focuses on understanding how young audiences interact with the scientific content promoted by RTVE and, in particular, how they perceive the program 'Órbita Laika', one of the public broadcaster's most prominent science communication programs. From an interdisciplinary approach, it examines how digital platforms and social networks have established themselves as key tools for scientific dissemination aimed at a young, active, and increasingly demanding audience that has transformed its entertainment and information consumption habits in the digital environment (Vázquez-Herrero et al., 2022).

The research revolves around a case study focused on 'Órbita Laika', a science outreach program broadcast by RTVE since 2014. Through a dynamic format that combines humour, interviews, experiments, and rigorous dissemination, the program has managed to generate interest in science among a wide audience. However, its penetration among younger segments seems limited, especially when compared to other formats that are more used to the digital environment.

'Órbita Laika' ended its ninth season in December 2023, and its future remains uncertain. Social media platforms such as TikTok, Instagram, and YouTube have established themselves as key spaces for disseminating content among young people (García-Rivero et al., 2022; IAB Spain, 2022). Nevertheless, RTVE is unable to fully exploit the potential of these platforms to attract this strategic audience.

This study aims to analyse the extent to which the scientific content of the programme 'Órbita Laika' meets the expectations, languages and cultural codes of young audiences in the digital environment (Duque-Aguado et al., 2024). Similarly, it seeks to identify opportunities for improvement in formats, participatory strategies, and presence on digital platforms, intending to strengthen the role of public television as an agent of scientific and media literacy among young audiences, and of promoting the development of critical thinking within this sector of the population through the public media themselves (Prieto-Arosa and d'Haenens, 2025).

2. Theoretical framework

2.1. Young audiences in the digital age

The transformation of the media through technological, social, and journalistic advances has redefined the ways in which information is produced, distributed, and consumed, especially among young people (Vázquez-Herrero et al., 2022). Digital platforms have established themselves as priority channels of communication, gradually displacing traditional media and promoting a more participatory relationship between broadcasters and audiences (Robotham, 2021). This evolution has forced communication professionals to adapt to new languages, devices and formats in a media ecosystem where interactivity, individualised personalisation (Costera Meijer, 2023), and immediacy are key elements (Clouet and Lozada, 2023; Lenhart, 2015). The audience is no longer just a passive recipient of content, but an active agent in the construction of media discourse. The growing demand for democratic participation translates into greater citizen involvement in communication processes, both in terms of opinion and self-representation (Azurmendi et al., 2015; Carpentier, 2011a, 2011b).

The link between journalism and science has evolved towards greater collaboration. De Semir and Revuelta (2010) highlight the frequency and quality of contacts between journalists and scientists, which demonstrates a functional relationship aimed at transferring knowledge to society. Scientific dissemination not only answers the need to inform but also respond to society's demand to understand the world in where they live (de Semir, 2016). Alonso González (2019) addressed the need to achieve a real commitment to media literacy among young people and to promoting professional journalism based on the search for truth (Clouet and Lozada, 2023).

In the digital age, scientific dissemination faces new challenges: avoiding the trivialization of knowledge, maintaining informational rigour and achieving relevance on platforms dominated by brevity and information overload (de Semir, 2015; Revuelta et al., 2020). Therefore, communication is required not only to inform but also to engage audiences through a participatory, critical and accessible approach (Newman, 2024). This logic is especially important for young audiences, characterised by intense and multi-format interaction with digital content (Azurmendi, 2018; Vázquez-Herrero et al., 2022).

Generation Z, born between 1995 and 2010, is considered the first generation of digital natives (Prensky, 2001) and represents a key group for understanding changes in media consumption. These young people are used to constant interaction through social media, platforms they use not only to communicate but also to build identities, generate community, and consume informational content (Clouet and Lozada, 2023; Li, 2023). It is in this context that each PSM (Public Service Media) faces the crossroads of what type of use of social media to adopt, confronting the strategic dilemma of deciding (1) whether to create native content for social networks or (2) to promote their own productions on social media to encourage migration to their own digital platforms (Prieto-Arosa et al., 2025).

Traditional television has lost ground, to the detriment of traditional viewing habits, in favour of more agile, personalised, and visual forms of consumption. The global number of social media users increased from 3.726 billion in 2020 to more than 5 billion in 2024, with sustained growth driven by the search for entertainment, social connection, and access to news (Kemp, 2024; Newman et al., 2024). The Covid-19 pandemic further accelerated this transformation, positioning social media as a primary source of both information and escape (Moreno-Castro and Von Polheim, 2022; Wajahat, 2020).

In a context of constant transformation, Poell et al. (2022) highlight the central role of third-party platforms such as social media and video-on-demand services, which function as negotiation spaces between the media and younger audiences. In this environment, the goal is to capture the attention of young audiences through Digital First content (Robotham, 2021) in order to later on direct them toward the media's own digital platforms. Along these lines, Olsen et al. (2024) reinforce this perspective by introducing the concept of the 'platform paradox' and conclude that there is an inevitable dependence of the media on these commercial platforms to connect with young people. In any case, this concept refers to the inevitable dependence of public media on commercial third-party platforms, such as TikTok, YouTube, and Instagram, to reach Generation Z, even though these spaces operate according to algorithmic and monetisation logics that often conflict with the core values of public service (EBU, 2018).

The logics of algorithmic, control and data monetisation that guide third-party platforms (Poell et al., 2022) generate tensions that contribute to the 'media egocentrism' described by Costera Meijer (2023) and may hinder the promotion of critical thinking through the content designed by public media for youth audiences, as described by Prieto-Arosa and d'Haenens (2025).

In this context, the mission of media literacy of empowering young audiences to critically evaluate and co-create content in digital environments, fostering participation and democratic engagement (Alonso González, 2019; Azurmendi, 2018), is increasingly constrained. This structural tension manifests differently depending on the national context. While Norway's NRK promotes the migration of its audiences to its own platforms, the German ARD-ZDF alliance launched *funk*, a youth-oriented digital brand that distributes native content through third-party platforms as part of a Digital First strategy (Karadimitriou and Papathanassopoulos, 2024; Moe, 2024; Robotham, 2021). Nevertheless, even in innovative cases such as *funk*, the risk of 'media egocentrism' (Costera Meijer, 2023) persists an institutional tendency to prioritize brand visibility and performance metrics over dialogue and co-creation with the audience.

This imbalance becomes particularly problematic in the field of science communication, where media have the responsibility not only to inform but also to educate a critical citizenry (Prieto-Arosa and d'Haenens, 2025) capable of understanding scientific processes and their social implications (de Semir, 2016). When the egocentric logic of the user prevails over the educational one, social media turn into showcases rather than learning spaces, weakening the ability of public media to foster critical and participatory forms of media literacy among young people. In this sense, third-party platforms should also be understood as spaces of negotiation between media and audiences (Poell et al., 2022), where the balance between commercial logics and the democratic and scientific values that sustain public service legitimacy is continuously redefined.

With this in mind, it's possible to acknowledge that digital transformations entail both opportunities and risks. On the one hand, social media facilitates more direct, creative, and multiplatform-adapted science communication (Casino, 2022; García and Sánchez-Bayón, 2021). On the other hand, they pose significant challenges, such as the proliferation of disinformation, cyberbullying or the anxiety associated with intensive consumption of digital content (Brosius et al., 2022; Pérez, 2019; Tkhostov et al., 2022). Understanding this balance is key to designing effective and responsible communication strategies. In this regard, Karadimitriou and Papathanassopoulos (2024) emphasise the importance of public media fostering the migration of young audiences toward their digital platforms. This strategy aims to counter the individualised consumption that Costera Meijer (2023) identifies as an obstacle on social media to the development of a critically engaged and reflective citizenship (Prieto-Arosa and d'Haenens, 2025).

However, social media are not only entertainment and individualised environments, but also spaces of socialisation, learning, community and identity for young audiences (Clouet and Lozada, 2023). Their role as cultural mediators requires rigorous analysis that considers both their educational potential and their limitations in today's digital society (Boczkowski et al., 2017; Nielsen et al., 2016; Pagador and Llamas, 2014).

2.2. Scientific content in the Media

In recent decades, the media have played an essential role in the dissemination of scientific knowledge. Through various formats -from newscasts and specialised programs to podcasts and social media- science has gained visibility as part of public debate and the collective imagination (Blanco-López, 2004; Lozano, 2005). This media presence, however, faces challenges related to the simplification of content, sensationalism, and the lack of continuity in programming.

According to studies by the Spanish Foundation for Science and Technology (Martínez-Ruíz et al., 2005), Spanish citizens show a medium-to-high interest in science, despite perceiving low levels of information on these topics. Nevertheless, there is a high level of trust in the scientific community. This paradox highlights the importance of strengthening mediation between scientists and audiences through effective and engaging channels.

However, Olmedo (2010) criticises the limited presence of science on generalist television, arguing that, with some exceptions, such content has been relegated to marginal time slots or secondary channels. RTVE, for instance, made a stronger commitment to science in the 1980s and 1990s but has since reduced its visibility in mainstream programming (Gutiérrez-Lozano, 2002).

This decline has coincided with a broader transformation of the media landscape, in which serious debates and science outreach spaces have lost ground on television, giving way to shorter, more emotional, and fragmented models characteristic of digital environments (Arnaiz et al., 2023; Sidorenko-Bautista et al., 2021). Science communication has found new ways to connect with the public with the consolidation of the Internet and social media, particularly with young audiences. These platforms enable more direct, visual, and immediate communication, in line with contemporary digital consumption habits (Cors Alavedra, 2017; Domínguez-Gutiérrez, 2020). In this new ecosystem, science is presented in more accessible and personalised formats, adapted to the pace and lifestyle of users. YouTube was one of the first platforms to offer educational science content aimed at young people, while TikTok has emerged now as a central actor in this dynamic, standing out for its viral capacity and short-video format (Bernasconi, 2023; Martín-Neira et al., 2023a, 2023b).

TikTok has established itself as a key tool for science communication targeted at Generation Z. Its recommendation algorithm, visual interface and ease of content creation and sharing make the platform an ideal environment for transmitting knowledge in the form of infotainment (Ibáñez-Arias, 2022). According to Pérez-Escolar et al. (2023), science communicators on TikTok build significant bonds with their audiences through effective narrative and audiovisual strategies such as transmedia storytelling (Jenkins, 2006), which promote youth identification and active participation (Azurmendi, 2018). Nonetheless, the use of TikTok for science also raises risks. The playful and ephemeral nature of the platform can encourage the spread of pseudoscientific or superficial content, which calls for critical reflection on accuracy, rigour, and communicative responsibility in these spaces (Micaletto-Belda et al., 2024).

Despite these challenges, TikTok offers transformative potential for scientific literacy. Its ability to generate virtual communities around scientific topics, attract non-specialised audiences and promote

critical thinking makes it a valuable tool, provided it is used with solid communication strategies (Cabrera-Espín et al., 2023). As these authors point out, the challenge lies in incorporating new actors with a strong science outreach vocation and in consolidating science communication as a social commitment within the scientific community itself, one that fosters critical thinking among young people through media literacy (Prieto-Arosa and d'Haenens, 2025).

3. Methodology

This research is grounded in an exploratory-descriptive methodological approach, supported by a case study focused on the science communication program 'Órbita Laika', broadcast by RTVE on its linear channel La 2 and its digital platform RTVE Play. This strategy enables an in-depth examination of a representative case of science communication within the Spanish public service media context, considering both the program's content and its adaptation (or lack thereof) to social media. A case study is defined as an intensive and contextualised investigation of a specific phenomenon (Vilches et al., 2011), making it a suitable approach to explore how RTVE's scientific content aligns with Generation Z's media consumption practices. The research draws on the methodological frameworks of Hernández-Sampieri et al. (2010) and Vilches et al. (2011), with the overarching aim of analysing the relationship between young audiences and RTVE in the digital environment, focusing specifically on the perception of 'Órbita Laika' and its presence on social media.

From this, the following research questions (hereafter RQs) are derived:

RQ1. How do changes in consumption habits and participation on social media influence the perception of 'Órbita Laika'?

RQ2. Which strategies can be most effective in adapting scientific content to youth consumption in the digital age?

RQ3. How do young audiences perceive the scientific content produced by 'Órbita Laika'?

To address the proposed research questions, a content analysis was conducted on two key episodes of the program: 'Especial Episode 100' (October 17, 2023) and 'Science at the supermarket' (December 26, 2023) [The titles have been translated into English from the original language], the last episodes broadcast before the program's temporary suspension. In addition, the study examined activity on Instagram (the last 10 posts of 2023) and related content on TikTok published through the official profiles of RTVE, La 2, and science communicator Moure Ortega, using the hashtag #orbitalaika.

The software FanPage Karma was used to track interaction metrics during the period from April 18 to May 16, 2024 (see Table 1). This analysis made it possible to observe how the television format was adapted to digital environments, as well as to quantify the level of participation and impact on social media, despite the limited specific activity of 'Órbita Laika' on these platforms.

Table 1. Summary sheet of content analysis.

Type of analysis	Content and social media (TikTok and Instagram)	
Programme analysed	'Órbita Laika'	
First period analysed	1 February 2024 – 31 March 2024	
Defined analysis	Instagram: 'Órbita Laika's' 10 latest posts in 2023	
	TikTok: content under the hashtag #orbitalaika	
	FanPage Karma: last 28 days (from 18 April to 16 May 2024)	
Preliminary tasting of the period analysed	31 March 2024	
Collection of analysed data	16 May 2024	
Applications used	RTVE Play (programme content)	'Special Episode 100' (Season 9, 17/10/2023)
		Episode: 'Science at the Supermarket' (Season 9, 26/12/2023)

	TikTok, Instagram and FanPage Karma (social media content)

Source(s): Own elaboration, 2024.

The methodological design of this study combines a content analysis and a digital ethnography, integrating audiovisual sources, social interactions and qualitative opinions of young people. This triangulation of data allows for a more holistic and contextualised view of the social impact of RTVE's scientific content on young audiences, thus facilitating cross-validation of results and their interpretation from multiple perspectives (Vilches et al., 2011).

For the social media content analysis, thematic, formal, and interaction coding criteria were applied to assess how effectively messages were adapted to digital environments. Thematically, categories related to scientific everyday life (e.g., food, responsible consumption, environment) and institutional science communication were identified. On the formal level, variables such as format (reel, image, text), duration, use of accessible language, and visual resources were coded. Finally, the interaction dimension included engagement metrics (number of likes and comments) and the presence of dialogue between the program and its users. This coding system made possible to evaluate the relationship between content type, level of engagement, and the educational potential of scientific communication on social media.

Complementing the content analysis, a digital ethnography exercise (Pink et al., 2019) was carried out through a focus group with the aim of understanding how young people perceive RTVE's scientific content. This technique enabled sustained interaction with an online community composed of nine final-year journalism students from the University of Santiago de Compostela (six women and three men, aged 21–22, from Spanish nationality), all belonging to Generation Z. Participants were selected according to three main criteria: (1) their regular consumption of audiovisual and scientific content on platforms such as TikTok, Instagram and YouTube; (2) their familiarity with RTVE's digital offer and public media brands; and (3) their representativeness of the young media-literate audience that combines academic training in communication with everyday use of social media. This profile ensured that participants could provide informed reflections on both the narrative strategies of 'Órbita Laika' and the perceived distance between institutional science communication and the expectations of young audiences. Two activities were developed to explore these perceptions (see Table 2).

Table 2. Digital ethnography activities with members of Generation Z.

First activity	Participants previewed the selected episodes and discussed their impressions together in a moderated meeting via Microsoft Teams on 8 May 2024.
Second activity	Content proposal (individual): In a second phase, each participant designed a content proposal for 'Órbita Laika', intended for linear media and TikTok. Free reflection was encouraged, without a fixed script, in line with flexible qualitative methodologies (Hernández-Sampieri et al., 2010).

Source(s): Own elaboration, 2024.

On 2 July 2025, an updated quantitative and qualitative review of 'Órbita Laika's' Instagram account and the hashtag #orbitalaika on TikTok was carried out with the aim of checking whether there had been any new updates on the science outreach programme and keeping the data in this article up to date. On Instagram, 465 new posts linked to the latest season of the programme, which ended on 25 January 2025, were identified. On TikTok, however, no new posts are detected under the hashtag #orbitalaika from the social media profiles of RTVE, La 2 or the science communicator Moure Ortega, which are the actors analysed in this study.

4. Results

4.1. Limited presence on the social network most popular among young people

An analysis of 'Órbita Laika's' digital presence reveals a notable absence on TikTok, one of the platforms most used by Generation Z. Despite being broadcast on RTVE Play and Instagram, 'Órbita Laika' does not have its own official profile on TikTok, which limits its reach in a key space for scientific dissemination aimed at young people. This shortcoming contradicts the recommendations of authors

such as de Semir (2016), Carpentier (2011a, 2011b) and Azurmendi (2018), who emphasise the importance of adapting scientific communication to the languages and platforms of emerging audiences.

Although there are posts about the programme on institutional accounts such as @rtve and @la2_tve, the content lacks a structured and specific strategy for TikTok. Individual contributions from programme collaborators have also been detected, such as the populariser Moure Ortega, who posts under the hashtag #orbitalaika, although without editorial coordination with the RTVE brand. This fragmented approach suggests a missed opportunity to consolidate a young scientific community on this platform.

Table 3. Content found under the hashtag #orbitalaika on TikTok.

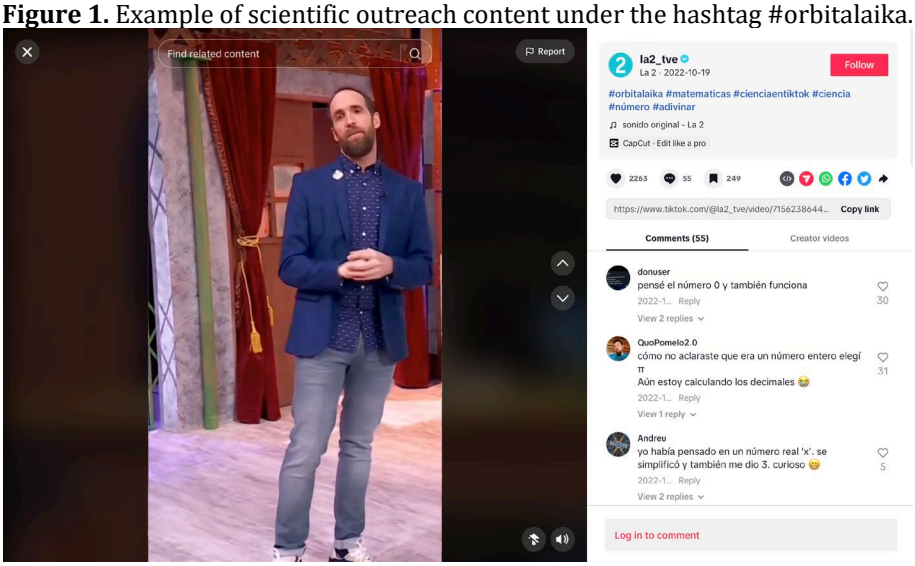
Profile	User	Features	Number of videos published
RTVE	@rtve	Videos of scientific processes. (last published in 2021)	7
La 2	@la2_tve	Institutional handover. [last published in December 2023]	24
Moure Ortega	@moureortega	Humorous and disguised disclosure. Latest video in October 2023.	9
Total			**40 videos**

Source(s): Own elaboration, 2024.

TikTok offers an ideal format for brief, visual, and viral scientific dissemination. However, the current strategy of RTVE and 'Órbita Laika' consists mainly of reusing fragments of the linear programme without specific adaptation for TikTok. This has resulted in videos that are too long or disjointed, reducing their communicative effectiveness (Ibáñez-Arias, 2022; Cabrera Espín et al., 2023).

In contrast, Moure Ortega's profile, although limited in terms of posts, demonstrates a greater understanding of the language of TikTok: characterisation, humour and a playful approach. Other successful content, such as that featuring Eduardo Sáenz de Cabezón or Javier Santaolalla, shows how the participation of communicators with a strong social media presence can attract significant audience interaction.

Figure 1. Example of scientific outreach content under the hashtag #orbitalaika.



Source(s): Screenshot taken on 15 May 2024 on TikTok.

The comments generated on TikTok around scientific experiments and debates demonstrate a high level of engagement, motivated by curiosity, interest and a desire to understand complex phenomena. In a video where Sáenz de Cabezón presents the classic experiment with the feather and the apple, there are a notable number of responses that delve deeper into understanding the physical phenomenon.

Figure 2. Example of successful science communication content on TikTok in the comments section.

Source(s): Screenshot taken on 15 May 2024 on TikTok.

This type of participation is consistent with the findings of Azurmendi et al. (2015), who highlight the potential of networks to activate collaborative knowledge and scientific literacy processes. Thus, TikTok reveals itself not only as an entertainment channel but also as a platform with educational potential if used intentionally and with rigorous content.

Figure 3. Example of scientific outreach content featuring Javier Santaolalla, a Spanish science communicator.

Source(s): Screenshot taken on 15 May 2024 on TikTok.

The analysis shows that 'Órbita Laika' does not currently have an established digital brand on TikTok, which limits its ability to build community and loyalty. The dispersion of content across different profiles, the lack of formal adaptation and the absence of an exclusive channel for the programme hinder its communicative impact. In this regard, various studies (Gutiérrez-Lozano, 2002; Sidorenko-Bautista et al., 2021; Arnaiz et al., 2023; Olvera, 2024) agree that simply fragmenting linear content is not enough, it is necessary to develop exclusive content that is clear and adapted to the format. It is also recommended to incorporate co-creation and collaboration strategies with influential communicators, use accessible audiovisual language, and develop specific sections for TikTok with short, interactive, and emotionally relevant content.

The 2025 update confirms the disappearance of TikTok as a channel for scientific dissemination aimed at young audiences by RTVE, La 2 and the science communicator Moure Ortega. The 'Órbita Laika' programme still does not have an official profile on this social network, and the decision not to disseminate content related to it under the hashtag #orbitalaika remains in place, despite the informative potential offered by the start of a new season in June 2024.

4.2. An inconsistent Instagram strategy that fails to capitalise on the potential to connect with young audiences

Given 'Órbita Laika's' significant absence from TikTok, the analysis focused on its activity on Instagram, a platform that is also popular among Generation Z and has a compatible audiovisual format. The last ten posts from the programme's official profile were analysed with metrics extracted using the FanPage Karma tool (see Table 4).

Table 4. 'Órbita Laika's' last 10 posts on Instagram.

Date	Summary content (Original titles in Spanish have been translated)	Interactions
12/04/2024	Forbes recognition for @mimesacojea + announcement of new programme 'Ovejas Eléctricas' (Electric Sheep)	371 likes, 14 comments
31/12/2023	New Year's greeting	1.372 likes, 14 comments
31/12/2023	'Why does fruit ripen?' with @moureortega	1.881 likes, 18 comments
31/12/2023	'How can you tell if a yoghurt is healthy?' with @boticariagarcia	9.585 likes, 95 comments
31/12/2023	Tips for the supermarket with @lauramoranfdez	833 likes, 9 comments
30/12/2023	Motivational message with @felipeparedesciencia	606 likes, 3 comments
30/12/2023	Neuromarketing and scientific communication with @lauramoranfdez	1.187 likes, 16 comments
30/12/2023	Enzymes and detergents with @deborahciencia	845 likes, 7 comments
30/12/2023	Corn and the environment with @eduardosdc	1.146 likes, 5 comments
29/12/2023	Enzyme applications in cosmetics with @deborahciencia	778 likes, 2 comments

Source(s): Own elaboration, 2024.

Most of the posts are clips from the last episode aired ('Science at the supermarket', 26/12/2023). With the exception of one post on 12 April 2024, the account has been inactive since the end of last year, reflecting an intermittent and unstructured strategy.

Although nine of the ten posts were Reels, several of them were not adapted to Instagram's predominant vertical format, limiting the optimisation of the visual experience. In addition, there was little adaptation of the language and audiovisual editing to the digital environment, which may explain the limited interaction with much of the content.

The posts with the greatest impact were those that addressed everyday topics of general interest: 'How can you tell if a yoghurt is healthy?' (9,585 likes, 95 comments) and 'Why does fruit ripen?' (1,881 likes, 18 comments). These figures contrast with the low engagement observed in more technical content, which tends to lack accessibility for the general public. The ethnographic community consulted agrees that 'Órbita Laika' generates greater interest when it addresses issues applied to everyday life concerning the connection between science and daily experience. However, the programme's lack of response to user comments reflects a view of Instagram as more of a dissemination channel than an interactive space, which limits its function as a participatory tool for scientific dissemination (Sidorenko et al., 2021).

During the focus group held on 8 May 2024, participants proposed that topics of everyday interest, such as those addressed in successful publications, should become a separate section, with content designed specifically for social media. This strategy would allow the reach to be extended to platforms such as TikTok, where short, visual and relatable content generates greater engagement from young users. In addition, participants emphasised the need to incorporate subtitles in videos, as part of the accessibility standards established by the EBU (2018). This demand for improvement is in line with the principles of public service in the digital environment, especially for educational content aimed at diverse audiences.

Complementary analysis by FanPage Karma shows a sustained decline in followers and an engagement rate of 0% during the period from 18 April to 16 May 2024, suggesting that the account lacks the relevance and dynamism it should have. This pattern could be explained by the end of the programme's television season in December 2023, the absence of official communication about a possible tenth season, and the lack of exclusive content for Instagram. As Martín-Neira et al. (2023b) warn, the weakening of the digital brand may isolate certain audience niches and alienate young audiences from the scientific discourse promoted by RTVE.

Analysis of Instagram activity shows that 'Órbita Laika' maintains a digital presence that is unstrategic and underutilised. Although some content has shown potential for virality when addressing every day and accessible topics, the absence of planning, interaction and accessibility limits its ability to build community and retain young audiences.

However, the update carried out in 2025 shows that 'Órbita Laika's' management realised the need to redefine its strategy for reaching young audiences through Instagram. Between June 2024 and January 2025, 465 pieces of content were published, of which 95.6% were reels with excerpts from the various episodes of the tenth season. Of that total, six posts were dedicated to self-promotion of the programme in June and July 2025, announcing the new season, until 26 September of that same year, when the piece that officially marked the start of the season was published. The remaining 458 posts were clips from the programmes broadcast on Tuesdays at 10 p.m. on La 2 or live via RTVE Play.

Despite the effort put into the volume of content, all the reels related to the programme retained the original horizontal broadcast format, without adapting to Instagram's vertical format, which limited the user experience. As a new feature, there are 19 videos in vertical format in which an expert shares interesting facts as additional content.

However, these videos are quickly produced and poorly researched, without a clear strategy to capture the attention of young audiences. Although there was a significant increase in the frequency of publication during the season's broadcast, this activity ceased completely once the programme ended. The strategy continues to fail to respond to the dynamics of the network or the expectations of young users, reinforcing the feeling of a sustained disconnect between the programme and its audiences in digital environments.

4.3. Generation Z around 'Órbita Laika': a critical audience faced with a programme that fails to connect with young people

The members of the focus group, made up of Generation Z young people participating in the online community designed through digital ethnography, unanimously expressed their concern about their disconnection of 'Órbita Laika'. During the first activity on 8 May 2024, they pointed out a general feeling that RTVE has an ambivalent attitude towards its young audience. There is an intention to attract them, but without any real commitment to doing so. In the words of the group, the programme's strategy is perceived as "I can, but I don't want to".

One of the most criticised aspects was the inadequacy of the language and narrative structure, even in sections apparently aimed at young people. Although presenter Moure Ortega uses costumes and a playful tone, the participants highlighted the lack of clarity in the presentation and conceptual adaptation to a lay and young audience (Martín-Neira et al., 2023a). The result, according to the group, is an emotional and intellectual distance that discourages connection with the content.

Added to this is the programme's inconvenient schedule –Tuesdays at 10 p.m., lasting almost an hour– which is considered unsuitable for capturing the attention of young audiences. Furthermore, the programme's absence from social media, especially TikTok, reinforces the perception of a disconnect with this generation's digital consumption dynamics (Bernasconi et al., 2023).

During the second focus group activity, a series of proposals for improvement were generated to modernise 'Órbita Laika', both in its linear version and in its digital projection. These recommendations were systematised into seven strategic lines (see Table 5), with an emphasis on adapting content to social platforms and incorporating specific sections for young audiences.

Table 5. Suggestions for improvement from the digital ethnography online community.

Nº	Proposal	Content destination
1	Section: 'Science Today'	Linear programme and adapted TikTok
2	Collaborations with science communicators (e.g. Quantum Fracture)	Linear programme
3	Section 'Orbita Z' with youth participation in experiments	Linear programme
4	Short themed videos for children (e.g. AI applied to different contexts)	TikTok and Instagram
5	Adapted 'What if...' section	Linear program + TikTok/Instagram
6	Section on 'Mythical Science' about scientific demystification	Linear program + TikTok
7	Using virtual reality to visualise complex phenomena	Linear programme

Source(s): Own elaboration, 2024.

These proposals address two key concerns: (1) making scientific knowledge more accessible through youth-friendly language and (2) increasing young audiences' participation and identification with the programme. The group highlighted that 'Órbita Laika' does not have a clearly defined target audience, which creates a sense of conceptual vagueness and makes it difficult to empathise with the format.

Among the notable proposals is the creation of the 'Órbita Z' section, designed to give visibility to young people in scientific learning and experimentation processes. Although this section does not follow a strict co-creation model (Vaz-Álvarez, 2021), it does seek to integrate the youth audience as active collaborators. Similarly, the 'Mythical Science' section proposes a dual format: (1) in the linear format, it would include street surveys and the debunking of scientific myths with well-known characters from the programme, and (2) on TikTok, the section would feature its own character created to explore the origins and persistence of popular scientific myths.

In addition, participants suggest including scientists in training (pre-doctoral students) as a bridge between technical and informative language, promoting a more empathetic understanding of the topics covered. Here, members of the online community identify a deep gap between the programme's communicative intent and its current execution. From their perspective, 'Órbita Laika' needs a "new lease of life" to be relevant in today's digital ecosystem, and they propose a new strategy to be presented to the RTVE programme (see Table 6).

Table 6. New 'Órbita Laika' strategy proposed by Generation Z.

Strategy of...	Explanation
Form	Shorter, more visual and dynamic formats.
Content	Connection to everyday life and social issues of interest, using clear and understandable language.
Channels	The prominence of TikTok and Instagram as central platforms for scientific dissemination and media literacy among young people.
Engagement with young people	Respond to audiences, encourage interaction, and design participatory sections.

Source(s): Own elaboration, 2024.

Participants agree that 'Órbita Laika' remains a necessary and valuable project within RTVE, but insist that without a real digital transformation, the programme risks becoming irrelevant to young people, repeating patterns of disconnection that have already affected other science-based television initiatives (Cors Alavedra, 2017; Olmedo, 2010).

5. Discussion and conclusions

This research highlights a significant disconnect between the communicative objectives of 'Órbita Laika' as a science outreach programme and the expectations, habits and language of Generation Z. This gap not only affects the way young people perceive scientific content but also reveals structural deficiencies in the programme's digital strategy and, by extension, in RTVE as a public service broadcaster in the era of social media platforms.

One of the most striking findings concerns is the programme's strategic absence from TikTok, the social network with the highest growth and penetration among young audiences. Although there are posts related to 'Órbita Laika' under the hashtag #orbitalaika, these do not come from an official programme profile, but from institutional accounts such as RTVE and La 2, as well as from contributors such as Moure Ortega, and there have been no updates in recent years. The lack of its own channel prevents the programme from consolidating a strong digital identity and leads to a dispersion of content that dilutes its ability to generate community (RQ1). This disconnection is accentuated in a context defined by what Costera Meijer (2023) calls 'media egocentrism', in which young people exercise selective control over their digital environment and consume only those contents that align with their personal interests. This makes it difficult for public service media such as RTVE to integrate their proposals into the everyday media routines of Generation Z.

The content published on TikTok consists mainly of excerpts from linear programming, without the necessary adaptation to the codes of this platform: short duration, vertical format, fast narrative pace and direct appeal to the user. This lack of adaptation results in a token presence that compromises the effectiveness of scientific dissemination in an environment where brevity, interaction and personalisation are key. This wastes a fundamental opportunity to strengthen the emotional bond with young audiences and promote scientific literacy processes in accessible and participatory language (RQ2).

In the case of Instagram, the outlook is no more encouraging. Since the last television episode aired in late 2023, the 'Órbita Laika' account has remained virtually inactive, with sporadic posts, a lack of original content for the platform and little interaction with followers. When the programme returned with a new season, its 465 posts followed the same purpose and strategy, showing a new disconnect with what was demanded on the network and by its audiences (RQ2). Analysis using FanPage Karma revealed a progressive decline in followers and zero engagement, placing the account in what could be called a "ghost state" (RQ3). This situation contravenes not only best practices in social media communication, but also the values of accessibility, dialogue and participation that should govern European public media, as established by the EBU (2018).

Taken together, these dynamics suggest that the challenge for RTVE is not only technological but cultural and editorial. The future of science communication within public service media depends on overcoming 'media egocentrism', embracing participatory co-creation with young audiences (Costera Meijer, 2023; Prieto-Arosa and d'Haenens, 2025), and developing platform strategies that transform dependence into dialogue. Only by integrating these dimensions can RTVE fulfil its educational and civic mandate in the contemporary digital ecosystem.

Azurmendi (2018) emphasises this need to understand young audiences not as passive recipients but as active, critical participants who demand proximity, interactivity, and authenticity in public communication. The ethnographic findings confirm this: Generation Z expects more horizontal relationships with media institutions and interprets the absence of dialogue as institutional detachment. One of the proposed sections of the ethnography group, 'Orbita Z', that includes youth participation in experiments, is a great example of an idea that could encourage participation and co-creation.

The study also demonstrates how the 'platform paradox' and third-party platform (Olsen et al., 2024; Poell et al., 2022) materialises in practice: in their effort to reach younger audiences, public media depend on commercial infrastructures that operate under algorithmic and monetisation logics, often incompatible with public service values. The case of 'Órbita Laika' exemplifies how this dependence can erode both the programme's coherence and its media literacy mission. Furthermore, the ethnographic findings illustrate what Carpentier (2011a; 2011b) calls the deficit of participatory intensity, as young people perceive a lack of recognition and space for co-creation, reinforcing feelings of distance and institutional detachment (Vaz-Álvarez et al., 2021).

However, there are a few posts that generated real interest on Instagram, particularly those that connect science with everyday life, such as topics related to food or responsible consumption. This type

of content not only encourages higher interaction rates, but also invites commentary, debate and informal learning, revealing the potential of science as a social experience when communicated in an accessible and practical way. This type of content was presented by the focus group as a way forward (RQ1, RQ2, RQ3).

The preference for content linking science to everyday life supports de Semir's (2016) idea of science communication as a civic, dialogic process rather than a didactic one. This approach, combined with Jenkins's (2006) notion of transmedia storytelling, points to the potential of developing an integrated strategy where each platform fulfils a specific educational and emotional function. Ultimately, this research shows that for RTVE and public service media more broadly digital presence alone is insufficient; what is needed is a cultural transformation that embeds participation, affective engagement, and critical literacy (Prieto-Arosa and d'Haenens, 2025) into the very core of scientific communication.

The results obtained in the digital ethnography reinforce these observations. Participants clearly and repeatedly expressed their perception of disconnection from the programme. They criticised the lack of clarity in the presentation of scientific content, the rigidity of the formats, the poorly adapted language and the inappropriate broadcast schedule. The absence of interaction on social media was understood not only as a technical or strategic deficiency, but also as a sign of institutional disinterest in their interests and forms of participation. As a result, young people feel like secondary spectators of content that, although nominally aimed at them, does not recognise them as valid interlocutors or symbolic co-producers of scientific discourse.

In this context, the proposals put forward by the ethnographic community take on particular relevance, although they are also experimental for future research. The suggestions range from the creation of specific sections for TikTok and Instagram, to the incorporation of communicators with a strong presence on social media, or the direct participation of young people in scientific experimentation activities. The need to incorporate pre-doctoral scientists as mediators between expert knowledge and the audience was also highlighted, a strategy that can function as a narrative and epistemological bridge between the scientific community and the younger generations. These initiatives resonate with Azurmendi's (2018) view of Generation Z as an active and participatory citizenry capable of contributing to the co-creation of public value, positioning young audiences not as passive recipients but as collaborators in the renewal of public service communication.

Taken together, all these findings reflect a fundamental truth: scientific communication aimed at young audiences cannot be limited to superficially adapting traditional formats to new platforms. This age group requires a thorough review of the narrative approach, content structure, distribution channels, and communicative values that ultimately generate critical thinking and a perception of scientific learning in their daily lives (Prieto-Arosa and d'Haenens, 2025). It is also necessary to understand young audiences not only as recipients, but as an active community with their own codes, rhythms, and cognitive needs. Only then can we effectively respond to their demand for accessible, rigorous and emotionally relevant scientific content (RQ2, RQ3).

For its part, data collected during 2025 shows that, despite some attempts to increase 'Órbita Laika's' digital presence through a higher volume of posts on Instagram, the strategy remains insufficient to attract and retain Generation Z (RQ1, RQ3). The predominance of recycled content from the linear programme and the lack of adaptation to the formats and narratives typical of social platforms limit the construction of a solid digital identity and an authentic relationship with young audiences (RQ2). This lack of consistency and continuity highlights the urgent need to design a transmedia strategy that integrates original content, interactive formats and genuine youth participation (Prieto-Arosa et al., 2025) to ensure not only the visibility but also the educational and social impact of the programme in the contemporary digital ecosystem.

Generation Z's perception and reception of 'Órbita Laika' is conditioned by the programme's poor adaptation to the contemporary digital ecosystem. RTVE, as a PSM, has a responsibility to renew its scientific dissemination strategies in order to adequately fulfil its public service mission, especially in a media environment characterised by fierce competition for attention and by young audiences who demand formats that are aligned with their ways of learning, interacting and informing themselves.

The tenth season showed a first attempt at repositioning through a notable increase in Instagram posts, seeking visibility in the algorithm (RQ1). However, this strategy was based mainly on the volume of content and not on a real adaptation to the language, format and logic of the platform, nor on a

meaningful connection with young audiences. The absence of coherent planning and a specific transmedia narrative highlights the urgent need to rethink the approach if the aim is to effectively reach new generations (RQ2).

'Órbita Laika' faces the challenge of reinventing itself and becoming an example of media literacy among young people (RQ3). It is not just a matter of updating its social media profiles or increasing the number of posts, but rather of building a scientific outreach project that is consistent with the logic of the digital environment, capable of engaging with new generations and actively contributing to their scientific literacy. And here we are talking about an urgent need if we want to ensure the survival, relevance and social utility of the programme for young people and of RTVE within the media and educational ecosystem of the 21st century.

In conclusion, the case of 'Órbita Laika' shows that the renewal of public service media in the digital era requires more than technological adaptation, it demands a deep cultural and editorial transformation. Overcoming 'media egocentrism' (Costera Meijer, 2023) and recognising young audiences as active, participatory citizens rather than passive recipients (Azurmendi, 2018) are crucial first steps. In parallel, addressing the tensions of the 'platform paradox' (Olsen et al., 2024) and the challenges posed by third-party platforms (Poell et al., 2022) is essential to restore the relevance and legitimacy of public media. Also, promoting media and scientific literacy within this framework can turn platforms from spaces of dependence into arenas of dialogue and co-creation, allowing RTVE to strengthen its educational and democratic mission through 'Órbita Laika' as a scientific reference content for Generation Z.

6. Funding and acknowledgements

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: This work was funded by Proof of Concept Project 2023 "Creation of an AI-powered chatbot-generating platform for the communication of PSM public value" VALUEBOT (Ref. PDC2023-145885-I00), funded by MCIN/AEI/10.13039/501100011033 and by the European Union "NextGeneration EU"/PRTR and the Knowledge Generation 2024 project "Open Public Media in the Age of Artificial Intelligence: Public Value, Inclusive Society and Ecosystem Innovation (OpenPSM)" (Ref. PID2024-160337OB-I00). It is also part of the activities associated with the RTVE-USC Institutional Chair on Public Media in Europe.

The author Juan Manuel Prieto-Arosa is a beneficiary of a FPU Contract from the Ministry of Science, Innovation and Universities (Ref. FPU21/00822) and of the Complementary Mobility Grants for beneficiaries of the FPU 2024 programme (Ref. EST24/00013).

7. Conflict of interest

The authors declare that there is no potential conflict of interest with respect to the research, authorship and/or publication of this article.

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