frontiers | Frontiers in Communication

TYPE Mini Review
PUBLISHED 23 November 2022
DOI 10.3389/fcomm.2022.1034199

OPEN ACCESS

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SPECIALTY SECTION
This article was submitted to Science and Environmental Communication, a section of the journal Frontiers in Communication

RECEIVED 01 September 2022
ACCEPTED 08 November 2022
PUBLISHED 23 November 2022

CITATION
Schorn A (2022) Online explainer videos: Features, benefits, and effects. *Front. Commun.* 7:1034199. doi: 10.3389/fcomm.2022.1034199

Online explainer videos: Features, benefits, and effects

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Explainer videos are short films that explain abstract concepts and relationships, usually in an educational context. They apply storytelling techniques and focus on relevant facts using different visualizations. However, when reviewing the literature, it becomes evident that there is no universally applied definition for explainer videos and no consistent categorization. The vast majority of studies investigate explainer videos as learning tools, although many explainer videos follow persuasive goals. There are very little studies on the persuasiveness, which is problematic because explainer videos appear to be more than an important learning or teaching tool; rather, they are an activistic tool for promoting scientific topics and are a crucial marketing measure. In particular, in the context of science communication, it appears essential to investigate the impact on attitude and behavioral outcomes because there are numerous high-reach videos on YouTube that contradict scientific consensus. At the same time, explainer videos apply storytelling techniques, an informal communication style, and combine an off-voiceover with clear animations, which might lead to eased processing fluency and a positive experience, fostering persuasive outcomes. This mini review elaborates on these research gaps and compiles the state of research on explainer videos, with a focus on persuasive effects in informal settings, drawing on concepts from (science) communication and education.

KEYWORDS

explainer videos, narratives, persuasion, science communication, storytelling, visual communication, YouTube

Introduction

The use and importance of online videos about news, science, and climate change are continuously increasing (Allgaier, 2019; Frees et al., 2019; Galan et al., 2019). For example, 62% of Germans use YouTube frequently or occasionally as a search engine for specific questions and issues (Koch and Bleisch, 2020). Almost 70% watch videos on general knowledge topics, and 65% watch explainer videos or tutorials, with the share being even higher among young people (Koch and Bleisch, 2020; Wissenschaft im Dialog, 2021). Thus, explainer videos are an important learning tool and a regular source of information on various topics. They explain abstract concepts by using illustrations, animations, and storytelling techniques, typically combined with a voiceover. Accordingly, there is a strong research line focusing on the learning effects of explainer videos within educational contexts such as schools or universities (e.g., Brame, 2016; Krämer and Böhrs, 2017, 2018; Kulgemeyer and Wittwer, 2021; Bucher et al., 2022) or international development (e.g., Bello-Bravo et al., 2013, 2015, 2018; Bentley et al., 2014; Maredia et al., 2018).

However, when uploading explainer videos on platforms like YouTube, producers might not only aim to enhance recipients' knowledge but to exert influence. Explainer videos as science videos can have an agenda, especially when addressing controversial topics (Davis and León, 2018). In this case, explainer videos, attempt to persuade and raise awareness of a certain position, rather than presenting the unbiased truth (De Lara et al., 2017; Davis and León, 2018). They can be used, for example, to promote environmentally friendly behavior; however, they could also be misused to spread misinformation and pseudoscientific beliefs (Allgaier, 2019; Erviti et al., 2020; Rosenthal, 2020). The latter can also be associated with the commercialization of YouTube because (pseudoscientific) videos might generate more views and this can lead to higher revenues (e.g., Rosenthal, 2020). For example, YouTube channels can be a tool to generate money through advertising revenue and product placements, or to promote products or services directly (Geipel, 2018; Cwielong and Kommer, 2020). This commercialization is also reflected by the fact that design agencies are increasingly offering explainer videos for companies or institutions to support their public relations. In this case, explainer videos do rather focus on giving introductions to products and services as part of their public relations measures than on making complex concepts understandable (Ivanova, 2017; Kilroy).

However, while explainer videos appear to be more than an important learning or teaching tool, academic research appears to lag behind, and there is a need for studies regarding persuasive effects of explainer videos in informal situations.

This mini review aims to compile the state of research on explainer videos, with a focus on persuasive effects in informal settings, drawing on concepts from (science) communication, education, and corporate literature. First, the features of explainer videos will be mapped out and distinguished from other formats, before discussing the motivation for producing explainer videos. Next, the effects of oversimplification and misinformation are considered. Subsequently, persuasive effects of explainer videos will be discussed and research gaps will be elaborated. Finally, an outlook and brief call for research will be provided.

Definition and distinction to other formats

Definition and features

Explainer videos are short films that explain abstract concepts. They apply storytelling techniques and typically last between 1 and 3 min, which usually comes with an increased speaking rate (Brame, 2016; Krämer and Böhrs, 2017, 2018). This can have a positive effect on engagement, particularly if associated with an enthusiastic performance (Findeisen et al., 2019). They do not go into great detail, and instead focus on the most relevant facts using animations, illustrations, graphics, photos, or text (Krämer and Böhrs, 2017; Anders et al., 2019; Zander et al., 2020). Explainer videos can be, for example, live scribbles (e.g., Kahn Academy; Minutephysics), whiteboard animations (e.g., explainity; Minuteearth), fully animated videos (e.g., simpleclub, TED-Ed), or mixed forms (e.g., maiLab).

Wolf (2015a) characterized explainer videos initially with four features: (1) thematic diversity: these videos can be for a broad audience as well as for a very specific target group; (2) creative diversity: the design effort ranges from improvised *ad hoc* productions to semi-professional, elaborately designed videos, or even to entire series with a large number of explainer videos that build on each other; (3) informal communication style: recipients are addressed informally and explanations are not given "from above"; simultaneously, humor and self-criticism are often used (cf. Cwielong and Kommer, 2020); (4) diversity in authorship: explainer videos can be produced by laypeople as well as by professional media creators, experts, or scientists.

Narrative structures

Besides these features, an important characteristic of explainer videos is their narrative structure, which aims to be both informative and entertaining (Munoz Morcillo et al., 2016; Boy et al., 2020). They typically follow a three-act structure with a brief introduction, a middle section that presents a problem or question, and an end that resolves the situation. They often include a prompt, which can be a direct call-to-action or a soft nudge (Alam, 2021; Keith). However, a detailed, research-based classification of narrative structures in explainer videos is pending. Nevertheless, examples of narrative structures, such as problem-solution videos or cut-to-the-chase explainer videos, are mentioned by producers (e.g., Oentoro, 2018; Najeeb, 2020).

There are two common types of problem-solution-explainer videos: the "meet Bob" trope and the "cookie-cutter" technique. Explainer videos applying the "meet Bob" trope use a fictional character similar to the target audience who serves to introduce a problem and then provide a solution, including an explanation of the process to achieve this solution (e.g., "This is Bob. Bob is struggling with…"; Oentoro, 2018; Najeeb, 2020; Alam, 2021). The character offers a broad potential for identification and can serve as a behavioral model, illustrating the positive results in the character's life evoked by the call-to-action (Alam, 2021).

However, when there is no "Bob" standing for the average audience because a large, diverse group is addressed, the cookie-cutter technique is often applied (Oentoro, 2018; Najeeb, 2020). In this case, the problem and solution are generalized to address a large audience including multiple groups of people (e.g., "It is a common problem that…").

In addition to these problem-solution videos, there are cut-to-the-chase explainer videos, which do not describe the problem in detail; instead, they answer an explicit question or address a problem specifically mentioned in the title. The term "cut-to-the-chase formula" is typically used by production companies with the goal of pushing a product as the "secret sauce" to solve a problem (Oentoro, 2018; Najeeb, 2020). However, the idea is very similar to educational explainer videos addressing, for example, school topics, because in this context, it is negligible to describe the relevance of a certain problem. Those videos often focus on very specific target groups, which is why they do not need to get the recipients' attention by highlighting the (personal) relevance of the problem—they can cut to the chase directly.

Distinction to other formats

Despite these features, there is still no general distinction between explainer videos and similar formats. For example, Wolf (2015a) distinguishes explainer videos from pure performance videos, in which a skill is displayed for self-expression without further didactic preparation. Nevertheless, he and others (e.g., Findeisen et al., 2019; Alam, 2021) classify tutorials as explainer videos, while some scholars differentiate tutorials because they describe linear step-by-step processes (how) instead of explaining a topic (why) on the basis of a short narration (e.g., Köster, 2018; Kiesler, 2020).

Moreover, online science videos are similar in format. They address science topics with an educational objective on the internet (e.g., Flagg, 2005; Munoz Morcillo et al., 2016; De Lara et al., 2017; Velho et al., 2020). Science videos are usually like documentaries or reportages and therefore often longer than a couple of minutes with a greater production effort (Findeisen et al., 2019). They rather aim to represent reality using models or experts (Bradbury and Guadagno, 2020) and impressive pictures (Jensen et al., 2022). Consequently, they have a lower degree of didacticism (Findeisen et al., 2019). Explainer videos, on the other hand, focus on specific aspects, reducing complexity for the benefit of didactic principles and do not try to depict reality.

Furthermore, it is disputed whether recordings of live presentations are explainer videos (Zander et al., 2020). Such recordings are usually longer, and their main audience are not recipients of the online video. The speaker is in the center rather than the subject and its visualization, which might even distract from the content (Bucher et al., 2022). They typically demand completeness and (in-depth) correctness, while explainer videos simplify on purpose (Findeisen et al., 2019).

In general, to determine whether a video is an explainer video, it can be useful to further focus on the explanation aspect: Explanation happens as an interaction between an explainer and at least one listener (Findeisen, 2017; Findeisen et al., 2019). Regarding the topic, the explainer has a knowledge advantage and ensures the contents are understandable. Thus, explaining is not about presenting expert content but about making it comprehensible (Kulgemeyer and Peters, 2016; Findeisen, 2017). Based on this, I propose to define explainer videos based on the following features: (1) Explainer videos are short (online) videos that address their viewers as the main target group. (2) The main goal is to explain something: they focus on the *why* rather than the *how to*. (3) The emphasis is on the subject, not the speaker; they commonly use visualizations or animations combined with a voiceover. (4) Explainer videos apply an informal, humorous, and narrative communication style with a typically high speaking rate. Nevertheless, explainer videos cannot be unambiguously distinguished from other formats. For example, explainer videos can be science videos and vice versa, but this does not have to be the case.

Motivations to produce online explainer videos

Wolf (2015b) mentioned initially four motivations for the creation of explainer videos for YouTube: self-expression (demonstrating knowledge and skills), self-learning support (learning by teaching), peer-based learning (creating videos related to each other), and offering educational resources (sharing knowledge). However, this mainly educational perspective is too short-sighted because activistic (e.g., Davis and León, 2018) and commercial interests are increasingly coming to the fore (e.g., Munoz Morcillo et al., 2016; Cwielong and Kommer, 2020).

Science communication and activism on YouTube

One purpose of YouTube is the distribution of non-profit content, ranging from professional education content or public service materials to community-building content by non-professionals and activists (Hartley, 2012; Geipel, 2018). Accordingly, Davis and León (2018) conclude that a considerable proportion of the science presented in online videos has an agenda, especially concerning controversial topics like climate change or vaccinations. Such videos do not aim to present unbiased facts, but they attempt to persuade and to strengthen a certain position (Davis and León, 2018). Regarding online videos on climate change, De Lara et al. (2017) emphasize that they do not only intend to be informative but try to raise awareness: 40% had information as their main objective, followed by 35% aiming for awareness-raising or persuasion. However, it is not entirely clear whether the category "awareness raising/persuasion" only includes scientifically correct videos or includes misleading, pseudoscientific content as well. Even though those studies refer to online science videos in general, it can be assumed that this also applies to science-related explainer videos as a subcategory.

Self-promotion and marketing

Explainer videos can be a tool for business-to-business, business-to-consumer, or consumer-to-consumer communication (Krämer and Böhrs, 2018). In this regard, the channels of YouTubers and bloggers are also considered as businesses because they pursue commercial interests. For example, they earn money through advertising revenues (e.g., high number of clicks or product placements), or they use the channel to promote their own products and services (Cwielong and Kommer, 2020). In this context, explainer videos can still be some form of self-expression. However, the transition to image or advertising videos is becoming obscure (cf. Anders et al., 2019).

Conflicts of interests

Conflicts of interest may arise when explainer videos serve purposes other than to objectively enlighten viewers about a topic. For example, students might watch explainer videos to learn about academic subjects, although large YouTube channels are primarily interested in generating "views" and "likes" because those metrics may boost their income. Consequently, the producers of such videos might pay more attention to increasing the popularity of the videos than scientific correctness (Kulgemeyer and Peters, 2016; Kulgemeyer and Wittwer, 2021). On the one hand, even if explainer videos are used to meet certain marketing objectives or to gain popularity, they can still meet the audience's approval, which makes them a particularly valuable marketing tool (Ivanova, 2017). On the other hand, it can be problematic when explainer videos oversimplify or intentionally disseminate false information to generate more views or to earn money (e.g., Rosenthal, 2020).

Oversimplification and misinformation

Explainer videos can lead to misconceptions in the process of simplifying complex topics, even if they do not include obvious errors. Some explainer videos include alternative, simplified explanations that can cause an illusion of understanding (Findeisen et al., 2019; Kulgemeyer and Wittwer, 2021). This is particularly problematic because explainer videos including misconceptions are not only perceived as better understandable, but they have better ratings and are consequently more likely to be suggested by the algorithm (Kulgemeyer and Wittwer, 2021).

Generally, the amount of unreliable content on YouTube is increasing, and some explainer videos aim to intentionally spread alternative explanations for controversial topics, intending to lead recipients away from scientific consensus toward misinformation and pseudo-science (Davis and León, 2018; Donzelli et al., 2018; Allgaier, 2019; Erviti et al., 2020; Rosenthal, 2020). Such videos can lead to high engagement rates, which can—regardless of the actual intention—lead to these videos gaining even more reach (Rosenthal, 2020). However, it is hard to tell if producers upload misleading and incorrect explainer videos because of financial revenue or because they are following an agenda.

Persuasive effects of explainer videos

Many manuals and white papers have been written about explainer videos and their effects, often conducted by the companies themselves or in collaboration with them (e.g., Krämer and Böhrs, 2017, 2018; Najeeb, 2020; van der Schelde et al., 2021; Andrianko, 2022; Animation Explainers, 2022; Kilroy; Putnam). Additionally, practitioners provide several blogs in which they describe what allegedly makes explainer videos successful (e.g., Oentoro, 2018; Najeeb, 2020; Keith). At the same time, there is a lack of academic research regarding their features and effects, apart from an educational context.

State of research

Although many explainer videos follow an agenda or persuasive goals, the vast majority of studies investigate explainer videos as learning tools, focusing on formal rather than informal learning (e.g., Flagg, 2005; Wolf and Breiter, 2014; Wolf, 2015a; Brame, 2016; Findeisen et al., 2019; Cwielong and Kommer, 2020; Schmidt-Borcherding et al., 2020; Zander et al., 2020; Kulgemeyer and Wittwer, 2021). Most of these studies did investigate the effectiveness of explainer videos in a pre-test-post-test design and did not compare explainer videos to other formats, which considerably limits the number of relevant studies.

For example, Krämer and Böhrs (2017, 2018) demonstrate that explainer videos in general can enhance participants' knowledge in a pre-test-post-test design, and they find some differences between various explainer video formats. However, it is difficult to draw conclusions from their studies as it is not clear in which aspects the videos actually differ. Nevertheless, Boy et al. (2020) conclude that animated explainer videos are better suited for conveying factual knowledge and abstract facts than films with a talking protagonist in front of the camera.

Regarding information transfer, Schneiders (2020) concludes that one advantage of explainer videos is that they seem to convey information more successfully through their ability to bind attention for longer, as compared to plain texts or audio files, but there were no differences to a scrollytelling format. Hodam et al. (2021) conclude as well that explainer

videos might not be more effective than a combination of text and visualization as a learning tool. Similar to Schneiders, they discuss that videos might lead to an increase in motivation. Nevertheless, they both did not compare explainer videos to other video formats, for example, science documentaries.

Regarding persuasive effects, Lu and Wang (2018) show that explainer videos can have positive effects on knowledge about carbon offsets and on persuasive outcomes as compared to a printed information card. The video, however, contained considerably more information than the card.

Moreover, studies in the context of international development show that explainer videos can foster greater learning gains than traditional presentations and that people prefer them as learning tool because they are more engaging (Bello-Bravo et al., 2018; Maredia et al., 2018). Maredia et al. (2018) show that, as compared to traditional training programs (live demonstrations), explainer videos can increase knowledge but not the active application of the acquired knowledge. Nevertheless, after watching the animated video, up to 74% of people who had not previously used the promoted technology adopted the technology for the first time. Similarly, another study of Bello-Bravo et al. (2013) concludes that the vast majority of participants expressed an interest in applying the newly acquired knowledge after watching an explainer video. This does indicate the explainer videos can lead to behavioral change; however, they appear to not be more effective than the traditional learning programs.

Need for research: Persuasive effects

Overall, there are some studies on persuasive effects of explainer videos in specific areas, but the number is still rather limited. This lack of studies on persuasiveness and behavioral changes is critical for different reasons. Research indicates that explainer videos might be particularly persuasive due to their features, primarily, because they can lead to an eased processing fluency. For example, explainer videos apply storytelling techniques in addition to presenting facts. Such narratives can be processed more fluently as compared to non-narratives, and this, in turn, can enhance persuasive outcomes (e.g., Sick, 2020; Bullock et al., 2021). A similar effect might be expected from the informal communication style and the use of everyday language because these can generate positive judgments and may, in turn, enhance recipients' motivation and behavioral intentions (cf. Alter and Oppenheimer, 2009; Okuhara et al., 2017). Furthermore, explainer videos usually combine an off-voiceover with clear animations, which can improve learning effects because information can be processed complementary to the visual and verbal channels (Clark and Paivio, 1991; Mayer, 2014). This can again lead to eased processing fluency and a positive experience, fostering persuasive outcomes as well (e.g., Alter and Oppenheimer, 2009; Okuhara et al., 2017).

Furthermore, when features of explainer videos such as clear visualizations or language (e.g., Bello-Bravo et al., 2015) lead to a positive processing experience, this can be more associated with truth than misconceptions (cf. Alter and Oppenheimer, 2009; Kulgemeyer and Wittwer, 2021). Consequently, compared to other formats, explainer videos might be assessed as particularly trustworthy and reliable—regardless of their scientific correctness. Since there is a large number of high-reach YouTube videos contradict science, it is crucial to investigate the impact on attitude and behavioral outcomes.

Some educational literature and blog articles refer to the theories mentioned, but these are not directly tested (Ivanova, 2017; Bello-Bravo et al., 2018; Boy et al., 2020; Alam, 2021; Hodam et al., 2021; Andrianko, 2022; Putnam, n.d.). Future studies could investigate to what extent features of explainer videos (e.g., storytelling, communication style, voiceover and visualization) influence processing fluency and whether this has an impact on persuasiveness. Furthermore, several studies show that explainer videos can have a positive effect on knowledge acquisition. It could be investigated whether this is also associated with a change in behavior when, for example, topics in the context of climate change and sustainability are addressed in the video.

Conclusion

It is evident that there has been no universally applied definition for explainer videos and no consistent categorization, which makes it difficult to classify and compare the few (empirical) results. Nevertheless, features such as the length of the video, the goal to make something comprehensible for an online audience, the narrative structure, the informal communication style and the combination of visualization and voiceover can help to determine whether a video is an explainer video. These features indicate moreover that explainer videos might be highly persuasive, apart from being a convenient learning and teaching tool. However, there is still a need to study the persuasive effects of explainer videos.

Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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