



STUDENTS PERCEPTIONS OF FAKE NEWS CREATED BY ARTIFICIAL INTELLIGENCE: THE CASE OF DEEP SORIA

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Abstract

Fake news and artificial intelligence are phenomena addressed in academia and research within the fields of communication and audiovisual education. As a medium and language, cinema has mirrored these challenges, exemplified by the short film *Deep Soria*. The primary objective proposed in this study is to ascertain whether this short film, directed by Pedro Estepa in 2021, is perceived as a mockumentary and to explore students' perceptions of the social issues it raises and the way it expresses them. An ad hoc questionnaire was employed specifically for the short film, enabling the assessment of 118 students from the Journalism and Primary Education Degree programmes at the University of Valladolid. The method used is exploratory and descriptive. Results were obtained by combining descriptive statistical analysis and content analysis of the open-ended questions in the questionnaire. Notably, the study highlights the detection of the documentary's central themes- fake news and depopulation- the use of humour, the focus on depopulation, and suggestions for incorporating more elements of "everyday reality", such as images and testimonies from the inhabitants of Soria and the city/province. At the same time, the short film has been reevaluated for its propensity to address social issues.

Keywords – Cinema, Short film, Artificial intelligence, Disinformation, Journalism, Education.

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1. Introduction

Since its inception (1895), the seventh art has been responsible for capturing everyday life, showing and/or representing reality, serving as a direct witness, and fulfilling an informative, social and educational function.

Cinema, as a means of communication, seeks to capture versions of reality to convey messages, disseminate values and knowledge or influence the audience, "by its ontological nature, it is a perfect instrument for copying the world, a mechanical imprint" (Bazin, 1959-62 in Miguel-Borrás & Úbeda-Portugués, 2019: page 184); «[...] it is the first artistic medium capable of showing how matter collaborates with humans; allowing it to represent events or characters in a social, historical and

transformable light” (Miguel-Borrás & Úbeda-Portugués, 2019: page 183)». In this sense, it is possible to affirm that there are cinematic works that can denounce facts, raise awareness, or establish critiques about our environment. Ultimately, they contribute to literacy purposes. This study aims to raise awareness about detecting fake news, the proper use of Artificial Intelligence (AI) and the issue of depopulation in Spain, with a particular focus on the province of Soria.

In general terms, when we refer to the seventh art, we associate it directly with feature-length films. It is unusual to think of any work in the form of a short film because they “remain the great forgotten of cinema-[receiving] residual media and institutional attention [...]— often unknown to the general public” (Cea-Navas, 2022: page 10). The landscape for short cinematic narratives has primarily been confined to festivals. Paradoxically, there is easy access to platforms like YouTube, where audiences can view short films from past eras, amateur videos (primarily home movies), audiovisual capsules, transmedia creations (produced by users themselves), virtual events, experimental products, advertisements, and other content. The Internet has transformed into “a vast virtual space where hypertexts are endlessly referenced” (Ramírez, 2005: page 136). Professionally produced current short films are not freely available on the Internet unless there is a notable event. For instance, *El limpiapapabrisas* (Alberto Mielgo, 2021) briefly became accessible when it won the Oscar for Best Animated Short Film in 2022. Consequently, as previously mentioned, the distribution of short films is relegated to specialised festivals, where they circulate for a maximum of two years. Exceptions do exist, such as the short film *El Tratamiento* (Álvaro Carmona, 2019), whose distribution has extended over four years and continues to be selected for national and international festivals. This text analyses university students’ perception of the work *Deep Soria*, since it focuses on young audiences. Matei’s study (2022) is relevant, as it reveals that students at the University of Salamanca consume short films, albeit with minimal interest compared to other productions. Viewing primarily occurs via YouTube and in the limited spaces of Video On Demand (VOD) platforms, with infrequent attendance at film festivals. Those who do develop an interest in short films often express “less acceptance of the content exhibited at film festivals” (Matei, 2022: page 212).

Similarly, documentaries and various types (performative, archival, photographic creation, interactive, television, essay-film, audiovisual self-portraits, mockumentary, hybrid documentaries, docudrama, memory capsules, etc.) have limited commercial presence in mainstream cinemas. These genres often seek distribution through alternative circuits, although platforms have acknowledged the market niche for non-fiction works, consequently providing coverage of them. Nonetheless, their consumption rates remain lower than fiction (Barlovento Comunicación, 2021).

In this context, the marginalisation of short films and documentaries is palpable. This underscores our interest and justifies the decision to study the short film narrative, *Deep Soria*. Another reason that underpins the choice to examine this work is that it addresses three highly topical challenges: fake news, Artificial Intelligence (AI) and depopulation in Spain. Regarding the latter, the idea behind *Deep Soria* revolves around the demonstration known as ‘*La revuelta de la España vaciada*’ (The revolt of emptied Spain) on 31 March 2019, which director Pedro Estepa considers the catalyst and genesis for the narrative, highlighting the situation in the Castilian-Leonese province of Soria. This aligns with one of the essential features of a short film: its connection to social issues through creative freedom. The short film “as a field of artistic freedom free from industrial constraints consistently portrays aspects of the social sphere” (Cea-Navas, 2015: page 289).

Furthermore, *Deep Soria* is crafted as a mockumentary and incorporates humour—both aspects undoubtedly enhance its appeal. On the one hand, the fact that the short film is structured as a mockumentary (Roscoe & Hight, 2001) underscores its innovative approach, diverging from more traditional film conventions that “undergo significant modification” (Ramírez, 2005: page 155). Additionally, there is a duality between fiction-imagination and reality, prompting “a reflection on the possibility of truth in documentary cinema” (Aguilar-Alcalá, 2020: page 57) as well as the playful nature of fictionalised documentaries (Aguilar-Alcalá, 2020: page 57) that encourage active audience engagement.

In this regard, Nichols (2010) highlights that the pleasure of mockumentaries lies in engaging with an audience that is in on the joke. In line with this, López-Ligero (2015) proposes that mockumentaries can establish a “complicit and reflective vision” » (p. 180) with the viewer.

On the other hand, the humorous tone permeates the work’s narrative, potentially persuading the viewer. Schmidt-Noguera (2002) references Freud and Kris’s theories on the effects of irony and jokes on the unconscious.

All of this leads us to consider the short film *Deep Soria*, a valuable tool for our students. Through its viewing, we have gained insights into their reflections and perspectives on the phenomenon of disinformation brought about by the use of fake news and AI, as well as the social issue of population decline in Spain.

1.1. Literature Review

To frame this study, we have considered several recent academic works: Gómez-Diago (2022) analysed university students’ perspectives on AI based on research and teaching experiences in the Journalism Degree programme. García-Marín (2021) investigated Generation Z journalists’ opinions on fake news, Quevedo-Redondo, Gómez-García and Navarro-Sierra (2022) evaluated encouraging Journalism Degree students to acquire competencies by applying a pre-bunking strategy with news games. Additionally, Pérez-Escoda, Ortega-Fernández and Pedrero-Esteban (2022) examined the strategies and deficiencies within the university community for combating fake news, proposing digital literacy as a solution to the problem.

Additionally, studies on audiovisual literacy focusing on similar innovative experiences in other fields have been considered. For instance, Glas, van Vught, Fluitsma, De La Hera and Gómez-García (2023) demonstrate how video games serve as tools for literacy, promoting media competencies.

Our study is related to these three research projects. However, it focuses on examining a mockumentary short film. Through this analysis, we aim to identify students’ experiences and simultaneously establish synergies between the disciplines of communication and education and the themes presented in *Deep Soria*, the subject of our analysis.

On the other hand, various international studies that use film to demonstrate how the seventh art serves as a vehicle for raising awareness and/or as a tool for literacy have also been reviewed. Examples include Barrett (2022), Konkle (2020), Williams (2018) and Geltzer (2017).

We aim to highlight the discursive power of film and cinematic mediums in general and short films in particular. Additionally, we seek to contribute to the scientific community by exploring research that combines AI with university education (Journalism/Education) and revisiting Rodríguez’s (2018) proposal regarding the changes that its use can bring about.

We will provide an overview of each theme regarding the communicative and technological issues present in the short film *Deep Soria* (fake news and AI).

1.2. Artificial Intelligence

The concept of AI is attributed to the creation of computer systems, computers or robots capable of performing human actions, whether physical and/or mental. Therefore, it has multiple applications: in homes, the automotive sector, astronomy, economic and financial fields, medicine, the field of communication, etc. Thrun suggests referring to AI as “data science” (Thrun, 2017: page 19).

Rouhiainen highlights that AI is a complex term to delineate and provides a general definition: “the ability of computers to perform activities that typically require human intelligence” (Rouhiainen, 2018: page 17) and a more specific one: “the capability of machines to use algorithms, learn from data and apply what they have learnt to make decisions as a human would” (Rouhiainen, 2018: page 17).

Similarly, he highlights that unlike humans, whose rest is vital, AI-based devices do not stop: they are capable of analysing large volumes of information, and their error rate is lower compared to humans.

Abeliuk and Gutiérrez (2021) provide a retrospective on AI, highlighting pivotal events in its origins. They trace the roots of AI back to Ada Lovelace's experiments. In 1842, Lovelace systematised what has been considered the first algorithm capable of being processed by Babbage's machine (*a* pioneering project that laid the groundwork for the prototype computer as we know it today, designed by Charles Babbage 1822) and discovered the device's ability to intervene in various domains, particularly in mathematical applications. Her postulation eventually evolved into what we now recognise as AI, but it took over 100 years for AI to be recognised as a scientific field of study. In 1956, the premise was established during the Dartmouth conference, stating, "Human intelligence could be imitated and/or replaced digitally". Alan Newell and Herbert Simon's creation of The Logic Theory Machine (1956) marked a significant milestone in AI research, pioneering an AI computational program that contributed to developing a heuristic approach aimed at problem-solving or human decision-making (symbolic AI), which proved highly valuable for medicine. Concurrently, work began on designing artificial neural networks, leading to the emergence of the connectionist AI model in the early 1980s, devised by Geoffrey Hinton.

The advancements in AI have been driven by ongoing projects focused on developing applications of deep learning algorithms and neural networks. In the 21st century, AI usage has spread and democratised. Facebook and Google support open-access libraries (PyTorch and TensorFlow) that provide data and algorithms that are available for public experimentation. Another recent boost to AI has been providing society with the ChatGPT prototype, created by the company Open AI in 2022. This tool is freely accessible and has revolutionised the field of communication by enabling content analysis.

Surrounding this entire ecosystem in which AI makes our lives easier, questions have begun to be raised about its use. Abeliuk and Gutiérrez refer to "ethics" (2021: page 20); Gómez-Diago's study (2022) provides insights into how teaching approaches AI from a critical and applied perspective, Lopezosa and Codina (2023) believe that one of AI's advantages is its functionality in research (strengthening explorations). Yet, they also raise concerns about the risk of scientific fraud. Roubini also expresses his dichotomous perspective: AI is a "threat or opportunity" (2023: page 17).

The existence of AI presents advantages and disadvantages. *Deep Soria* refers to the use of AI for identity impersonation and, consequently, the possibility of generating and fostering fake news.

1.3. Disinformation and Fake News

In the midst of the digital age, hoaxes, rumours and fake news are scourges in the realm of communication, affecting us as recipients due to their rapid circulation. The distinctions between these terms are practically non-existent; hoaxes can be viewed as precursors to fake news, involving falsehoods disseminated by monarchs in the 18th-century gazettes and used as instruments for propaganda-driven disinformation by totalitarian regimes in the 20th century (Fernández, 2014). The notion that rumours, once spread by "word of mouth", have become today's fake news disseminated via social media is outlined by Amorós-García (2018), who argues that any fake news is deliberately crafted to deceive, characterised by two fundamental characteristics: a clear objective and an appearance of genuine news.

According to Fernández-Poncela (2020), rumours and fake news harm informative health, thereby affecting us mentally, emotionally and socially. The researcher asserts that "both virals spread at an extreme speed and are difficult to eliminate, although, like engineered viruses, they self-extinguish" (Fernández-Poncela, 2020: page 38).

Fake news began to emerge in the 19th century due to the increase in newspaper production, coupled with advancements in technologies of the time, which were the breeding ground for the potential to disseminate implausible information. One notable example is the series of six articles in the New York Sun (1835) alerting readers to the existence of life on the Moon (Allcott & Gentzkow, 2017) or the dramatisation of *The War of the Worlds* by Orson Welles (1938) which led radio listeners to believe that

alien spacecraft had landed on Earth through a meteor shower, which has been regarded as the first radio fake news in history. In addition to these events, William Hearst and Joseph Pulitzer are considered pioneers in generating fake news by resorting to sensationalism to boost newspaper sales.

“Since the late 20th century, we have been aware of the existence of other types of large-scale disinformation related to climate change, vaccines, food, nutrition, the origins of illnesses, nuclear energy or the impact of immigration” (Parra-Valera & Oliveira 2018: page 55).

In 2016, the Brexit process and the United States presidential elections, where Trump won the presidency, marked the phenomenon of fake news due to its widespread proliferation—from this moment on, the concept of post-truth emerged, “the era of deceit and falsehoods” (Grijelmo, 2017), especially with Trump’s ascension to power. Consequently, the issue of fake news began to garner academic interest and be analysed.

Alonso-González asserts that “fake news has become a constant in journalism and a real problem when discerning the truthfulness of information” (Alonso-González, 2019: page 31).

In 2020, due to COVID-19, fake news has become a threat, leading to “talk of an infodemic, paralleling the pandemic” (Fernández-Poncela, 2020: page 38). The fight against disinformation and fake news has become crucial for society. To combat this, organisations and fact-checking platforms have been created to verify and contrast information. In Spain, fact-checking platforms focus on detecting deception and contextual misinterpretations to the detriment of exaggerations and hoaxes (Salaverría, Buslón, López-Pan, León, López-Goñi & Erviti, 2020). Another solution involves appealing to ethics. Theorists Blanco-Herrero and Arcila-Calderón (2019) discuss deontological considerations in their study on Spanish journalists’ perception of fake news. Furthermore, cinema serves as another tool in combating disinformation. Therefore, we can reflect on the purpose of the short film *Deep Soria* as a vehicle for raising awareness about the existence of fake news.

2. Method

2.1 Design: Objectives and Methodological Approach

The primary objective of this research is to investigate the perceptions of young Journalism and Education students regarding fake news through their viewing of the short film *Deep Soria*. The secondary objectives are:

1. To determine their knowledge about audiovisual production and artificial intelligence
2. To explore their opinions and attitudes about the social role in short films addressing sensitive topics, such as depopulated areas where they live.

This study adopts an exploratory and descriptive approach (Vilches, 2011) carried out through descriptive statistical analysis and content analysis of open-ended questions in a questionnaire designed for the research.

2.2. Procedure and Sample

The sample consists of 118 university participants from the Faculty of Philosophy and Humanities from the Degree in Journalism (The University of Valladolid, UVa) and the Faculty of Education from the Degree in Primary Education (María Zambrano de Segovia Campus, Uva). These two faculties are interconnected through the area of Plastic Expression in Education (Education) and Audiovisual Communication and Advertising (Journalism). The curriculum guides from these two distinct areas emphasise the analysis of audiovisual documents and consider factors that can influence and shape the development of advertising and communicative discourse (mainly the consumer and current legislation). They aim to study and distinguish between various documentary modalities and their boundaries with fiction. Finally, they aim to cultivate the ability to gather and interpret crucial data (within their field of

study), enabling them to make judgements that involve reflection on essential social, scientific or ethical issues.

The participant sample (see Table 1) comprises 53% men and 47% women, aged between 19 and 34, with a mean age of 21.

| Gender | Frequency |
|---------------------------------|------------------|
| Men | 58 |
| Women | 60 |
| Age (years) | f |
| 19 | 16 |
| 20 | 24 |
| 21 | 60 |
| 22 | 8 |
| 23 | 5 |
| 24 | 2 |
| 25 | 1 |
| 28 | 1 |
| 34 | 1 |
| Studies | f |
| Primary Education | 57 |
| 3 rd year Journalism | 45 |
| 4 th year Journalism | 11 |
| Postgraduate | 5 |
| Usual Housing Area | f |
| Urban: Valladolid | 29 |
| Urban: Segovia | 30 |
| Urban: Madrid | 8 |
| Urban: otras | 11 |
| Rural: Valladolid | 13 |
| Rural: Segovia | 12 |
| Rural: Madrid | 10 |
| Rural: others | 5 |
| Family home | 75 |
| Shared housing | 31 |
| Living alone | 3 |

Table 1. Characteristics of the sample of participants

Of these, 53% are studying Primary Education, compared to 42% in their 3rd year of Journalism, 5% in their 4th year of Journalism and 1% in postgraduate studies.

Seventy-four per cent reside in urban areas (40% in Segovia, 31% in Valladolid, and 13% in Madrid), while 26% live in rural areas. Sixty-nine per cent live in their family home, 28% share housing with others, and 3% live alone.

An intentional non-probability sampling strategy, also known as a “deliberate or critical sampling” (Babbie, 1999: page 174), was used to select the participants for the study. This technique involves selecting participants based on specific criteria related to the research objectives and the researcher’s interests. In this case, an ad hoc questionnaire was designed for the study based on existing literature on survey methods (Gil & Martínez, 2001) and youth and ICT (López, 2011).

Therefore, when intentional non-probability sampling is used, it is “representative, and consequently, its representation depends on its intention» (Visauta, 1989: page 155).

It should be noted that while intentional non-probability sampling can be helpful in certain cases, this technique does not allow for generalising the results to the population, as the sample is not randomly selected. Therefore, it is essential to consider the limitations of this technique when interpreting the study results.

We designed a 30-item questionnaire divided into two sections to collect data for this study. The first section comprises seven questions aimed at gathering demographic information. This includes identifying students’ characteristics through personal and academic references, from which the studied variables are derived: gender, age, university degree, academic year, place of residence, province, and finally, their typical housing arrangements.

The second section consists of 20 items with open-ended and closed-ended responses. The close-ended questions provide four response options, each indicating the level of knowledge about the topic specific to that question. The three open questions at the end of the questionnaire are designed without a word limit.

The questionnaire was validated through collaboration with seven experts in Social Sciences. This validation process aimed to ensure the questions were suitable. Thus, the specialists assessed it based on the following criteria: coherence with the research purpose, clarity, appropriateness of the language for the target sample, and the need to add or remove questions. Following their evaluation, they provided feedback and recommendations regarding the changes needed for the initial version.

It is essential to highlight that validation is a fundamental step in research (Ruiz, 2014), as it ensures that the questions are formulated accurately and reliably to measure the variables under study. Therefore, careful consideration of the feedback provided by experts and the recommended modifications are crucial to enhancing the quality of the questionnaire.

The experts reviewed and approved the final version, and participants provided written informed consent to participate in this study. Furthermore, the questionnaire was tested by distributing it to a small group (12 participants) of university students to verify whether the questions were easily understandable and the response options covered all possible alternatives.

3. Analysis

To analyse the data, we conducted a descriptive statistical analysis of the information gathered from questions that described the sample. Additionally, we employed a content analysis of the various items to explore the responses. Four categories were defined (used in constructing the questionnaire) in a stage prior to the analysis (Bardin, 1991) aimed at observing the fake news phenomenon within the context of viewing *Deep Soria*. These categories include:

1. Training and Knowledge on Fake News (FN): This refers to university users’ education and knowledge regarding fake news (FN), which includes various forms of misinformation and manipulation of information shared online. Critical awareness of clickbait, post-truth, hoaxes, information overload (infoxication), and bots is essential. It is fundamental to verify the source and accuracy of the information before believing and sharing it (Lazer, Baum, Benkler, Berinsky, Greenhill, Menczer et al., 2018).
2. Training and Knowledge on Artificial Intelligence (AI) refers to the education and knowledge university student users possess regarding AI, encompassing digital culture, AI-supported digital competencies, and functional technological literacy within the digital society (Area-Moreira, 2012). It involves using tools productively, extending beyond mere operational use and understanding how AI tools can enhance performance and efficiency across various fields. Knowledge of AI

requires a deep understanding of how its algorithms and systems function. To be well-versed in AI, university students need digital competencies rooted in AI, meaning they must grasp how AI works and how it can be effectively applied. Education in AI and digital literacy is essential for preparing students for a future where AI will play an increasingly significant role in daily life and the workplace. University students must not only know how to use AI beneficially and responsibly but also understand the potential risks and challenges associated with this technology (Gisbert & Esteve, 2016).

3. The consequences and social entrenchment of fake news (FN) refer to the societal impact of fake news and how it has become ingrained in culture and society. According to Levitin (2017), education and critical thinking skills are essential in combating post-truth phenomena and falsehoods. By fostering a culture of critical thinking, individuals can better distinguish between fact and fiction and make informed and rational decisions.
4. Consequences and social entrenchment of artificial intelligence (AI) refers to the societal impact of AI and how it has become ingrained in culture and society. Grigore (2022) asserts that AI is a strategic technology offering numerous advantages to citizens, businesses and society at large. AI must be anthropocentric, ethical, and sustainable, respecting fundamental rights and values to fully leverage its potential without compromising our security or privacy. In other words, AI can significantly benefit society, but it must be implemented responsibly and ethically to maximise these benefits while minimising risks. By categorising the questionnaire data into these four categories, a detailed and comprehensive analysis of the phenomena of fake news and AI can be conducted, which can enhance understanding of their functioning and impact on university students and society.

The categories are coded according to the codes used in Table 2; each code is followed by a number indicating the order of the question and the participant's assigned number. For example, if the code is [CSAI-2041], it would correspond to the category "Consequence and social entrenchment (AI)" from question 20 and participant number 41.

| Category | Coding |
|--|--------|
| Training and Knowledge on Fake News. | [TKFN] |
| Training and Knowledge of AI | [TKAI] |
| Consequences and Social Entrenchment of Fake News (FN) | [CSFN] |
| Consequences and Social Entrenchment of AI | [CSAI] |

Table 2. Category of analysis (étic)

4. Results

The content analysis results through the analysis categories (étic) are shown below.

4.1. Training and Knowledge about Fake News (TKFN)

Regarding how the author conveys the message through the short film *Deep Soria*, it was easy to understand for most participants (88%, $f=96$). In comparison, 11% ($f=12$) indicated they understood some parts but not others. When asked about changing any aspect of the document to facilitate understanding for viewers who might not grasp it well, 66,7% ($f=72$) would not change anything. However, 23% ($f=25$) would conduct interviews with people on the street, and 8% ($f=9$) would include archival television footage.

Another issue raised is whether *Deep Soria* (or similar work) can increase public awareness and empower individuals regarding fake news and disinformation. Most believe it can ($f=79$), but 17% think it raises awareness but does not empower, and 10% ($f=11$) feel it raises awareness for specific audiences. This percentage also suggests that more street testimonies should be included, as indicated by participants'

requests for more current YouTubers. In fact, several participants would not choose the YouTuber featured and even requested representation of posts from other social networks. Another relevant contrast to private individuals is the opinions on the possibility of filming more celebrities.

“[...] at no time did I think it could be a hoax because the images of the YouTubers and presenters are very realistic” [TKFN-2147].

“Alternating testimonies from famous people and anonymous individuals” [TKFN-2123].

“I would change the influencer collaborating in the footage” [TKFN-2017].

Of particular interest are the results from the questions about whether *Deep Soria* has a more significant impact as a short film compared to a feature-length film. A majority (66.7%, $f=072$) believe it has a more substantial impact as a short film, while 27% ($f=29$) say its length is incompatible with the sensation it evokes. However, they also think that a feature-length film would be equally impactful.

Furthermore, participants were asked for their opinion on short films like *Deep Soria* touring festival circuits and being exclusively viewed within them. A majority of participants supported the notion of using classrooms as educational settings for screening such cinematic/audiovisual narratives using innovative methodologies (37%), while others expressed a desire to be able to see these films in cinemas or platforms (36%). Others understood the value of participating in festivals, acknowledging the need to achieve future profitability even if they did not reach a wider audience (17%). The emphasis placed on promoting these films through social media is evident (see Figure 1):

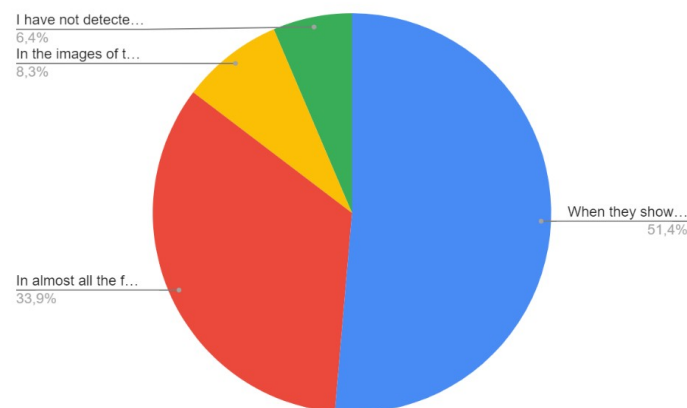


Figure 1. Results of the item: “In *Deep Soria*, fiction-representation is also applied. At what moment(s) in the footage is it detected?”

Certain elements in the creation and organisation of this work are highlighted, such as alternating archival television footage with authentic images (54%, $f=060$), the atmosphere (28%, $f=30$), and the use of news reports ($f=12$) and the music (13%, $f=07$).

4.2. Training and Knowledge about Artificial Intelligence (TKIA)

To assess participants’ knowledge of AI, they were asked whether the work *Deep Soria* is a documentary, mockumentary, fiction, or none of these. Responses indicated that 73% opted for mockumentary.

Efforts were also made to determine whether participants understood the nature of the characters: the majority responded that they are celebrities and ordinary people (87%), but few noticed the final detail about the use of AI to impersonate famous people, with only 3% answering that they are neither celebrities nor people in the street.

Regarding the approach to addressing the social issue of depopulated areas in the country through an ironic discourse, most participants (68,5%) believe it is a good idea, 25% express doubts, and very few think that it is not an effective approach to garner attention or that humour is not influential for such a call to action.

Concerning whether *Deep Soria* is considered to accurately portray and/or illustrate the context of the province of Soria, the majority responded affirmatively (48%), and a significant portion (33.3%) believes it should be extended to other regions. Participants perceive that more aspects need to be introduced.

“Show more street surveys, images of the city of Soria and some public figures from Soria”. [FCAI 2042].

“I would play more with the idea of deep fake and look for other YouTubers and influencers who have more influence on youth than JPelirrojo; someone like IlloJuan o Ibai would be better, I think. Also, I would show more of the reality of Soria, like there’s no highway to get there, you have to take a national road, and I would advocate for the recognition of “torrezno” (bacon) [FCAI 2052].

4.3. Consequence and Social Entrenchment of Fake News (CSFN)

Regarding the direct consequences and contribution of this short film in society to raise awareness about combating fake news about Empty Spain (see Fig 2), the participant’s opinion reveals:

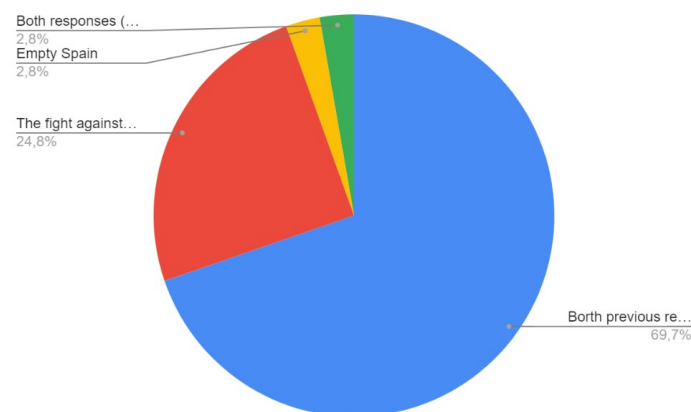


Figure 2. Results of the item: “The film *Deep Soria* contributes with...”

Respondents consider the short film *Deep Soria* as a socio-educational tool; 54% responded that it fulfils this social and educational role, although 39% believe that more pedagogical elements should be integrated into the film.

The majority (68.5%) answered yes to the question about the use of humour and its appropriateness for expressing what its creator intends, compared to 26% who were unsure. This question is directly related to another query about its humorous tone: 61% believe that *Deep Soria* captures the viewer’s attention more by employing comedy. Furthermore, 24% stated that emotionally uplifting content is more memorable later.

The ending of the short film *Deep Soria* is examined, which concludes with the expression:

“Now, Ground 0 is in Soria.” Participants were asked why the director of the narrative suggests that Soria is the new Ground 0. The participants clearly recognise the documentary’s social function since 70% express that it is a social critique of the situation of the depopulated province of Soria: “Without a doubt, I would choose Castilla to make a documentary with the same theme” [CSFN-2129].

4.4. Consequences and Social Entrenchment of Artificial Intelligence (CSAI)

When asked about the use of fiction representation and whether it is detected in the images, 51% of respondents do so in news reports and on the Internet, 34% perceived it throughout the entire footage, and few identified it in street images or did not detect it at all.

Regarding the perception of *Deep Soria* as a valuable creation for raising awareness about disinformation among viewers, the participants affirmed its efficacy in raising awareness about disinformation (79%) compared to 19.4% who believed its value is limited.

In response to the question about which fragment of reality is depicted in *Deep Soria*, the majority (73%) recognised demonstrations, 15% identified news reports, and 11% believed the documentary contained no actual events.

5. Discussion

Based on the findings from the short film *Deep Soria*, it has been established that most students from the University of Valladolid participating in this research believe that, despite being a mockumentary, it is comprehensible and can raise public awareness about fake news and disinformation. This aligns with Alonso-González's (2019) observation that fake news, prevalent in communication, poses a challenge to the credibility of information.

Participants suggest that more street testimonies should be shown. Filming real-life events (journalists in news broadcasts, demonstrations, etc.) and transforming them into fiction transforms the narrative into a deep fake, making students aware of the importance of verifying sources and the accuracy of information, as discussed by Lazer et al. (2018).

In terms of narrative construction, the majority believe that *Deep Soria* would have a lesser impact as a feature-length film than as a short film. They highlight significant elements of the creation, such as the interplay between archival television footage and real-life images, the incorporation of news reports, and music. A notable reflection is that viewing such works could be suitable within innovative methodologies.

Participants generally perceive the portrayal of the social issue of depopulation with humour as a good idea. They believe that the film realistically depicts the situation in Soria and note that the humorous tone captures the viewer's attention more effectively; this aligns with the perspectives of Freud and Kris, summarised by Schmidt-Noguera (2002), suggesting that humour enhances recall.

Another justification for applying the theory is the participants' perception of *Deep Soria* as a socio-educational tool, as the short film consistently reflects aspects of the social sphere (Cea-Navas, 2015). Although 39% suggested incorporating more pedagogical aspects, this perspective aligns with Levitin's (2017) premise that education and critical thinking are crucial to combating post-truth and falsehoods.

6. Conclusions

In conclusion, the significant findings of this study, based on students' responses, indicate a general awareness of the treatment of the two main themes of the documentary: fake news and depopulation. Participants primarily recognise these themes in the first two parts of the film: the set-up and the development. Regarding the conclusion of *Deep Soria*, a minority of viewers discern that the director reveals that the identity of the communication professionals featured in the film has been replaced at the end.

On the other hand, it is noteworthy that a high percentage of participants suggested more representation of "everyday reality", including images and testimonies from residents of Soria and the province. This request underscores a strong interest among participants in this sample, oriented towards the issue of depopulation. In this regard, for future research, it would be necessary to explore the correlation with students' personal experience regarding depopulated areas in their places of origin, also generally in Castille and Leon. Regarding the bias mentioned regarding depopulation, one variable to analyse is

“regionalism”, and another closely related one would be the visual impact or success of images chosen in the film, which depict demonstrations about depopulated territories. A line of research would be to observe how this visual impact weakens (or not) the second conceptual focus of fake news.

Regarding the documentary’s format, the use of humour and its length are endorsed, and more interviews or the genuine presence of locals are requested. Internally, the comedic elements of the short film clarify the veracity of the news broadcasted but also serve as a compelling and memorable tool for raising awareness among viewers. In this regard, we propose research aimed at exploring whether the traditional use of humour diverts the viewer’s attention and to what extent.

In light of the aforementioned, it is noteworthy how Pedro Estepa concludes his creation, highlighting the surprising finding that only a few students detected the final detail about the use of AI to impersonate identities. Therefore, there is an opportunity to expand the discussion in future research. Moreover, further research could delve into the technical algorithms employed to replace public figures in the production of *Deep Soria*, allowing for a more in-depth exploration of AI behaviour.

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References

- Abeliuk, A., & Gutiérrez, C. (2021). History and evolution of AI. *Bits of Science Journal*, 21, 15-21.
- Aguilar-Alcalá, S.J. (2020). From the fake documentary to the fake of documentaries: The fake documentary as a symptom of the documentary. *adComunica. Revista Científica del Estrategias, Tendencias e Innovación en Comunicación*, (19), 41-60. <https://doi.org/10.6035/2174-0992.2020.19.4>
- Allcott, H., & Gentzkow, M. (2017). Social media and Fake-news in the 2016 election. *Journal of Economic Perspectives*, 31 (2), 211-236. <http://doi.org/10.1257/jep.31.2.211>
- Alonso-González, M. (2019). Fake-news: Disinformation in the age of the information society. *Ámbitos*, 45, 29-52. <https://doi.org/10.12795/Ambitos.2019.i45.03>
- Amorós-García, M. (2018). *Fake-news: The truth of fake news*. Platform Ed.
- Area-Moreira, M. (2012). Literacy in the digital society. In Area, M., Gutiérrez, A., & Vidal, F. (Eds.), *Alfabetización digital y competencias informacionales* (3-40). Ariel.
- Bardin, L. (1991). *Análisis de contenido* (Vol. 89). Ediciones Akal.
- Barlovento Comunicación (2021). *Analysis of the Television-Audiovisual industry 2021*. Available at: <https://www.barloventocomunicacion.es/audiencias-anuales/2021-analisis-de-la-industriatelevisiva-audiovisual/>
- Blanco-Herrero, D., & Arcila-Calderón, C. (2019). Deontology and fake news: A study of the perceptions of Spanish journalists. *El Profesional de la Información*, 28, (3), 1-13. <http://doi.org/10.3145/epi.2019.may.08>
- Babbie, E. (1999). *Techniques of social research*. Thompson.

- Barrett, J. (2022). Go see it because it will make a better American of you?: The Birth of a Nation in the era of ‘fake news’. In Barrett, J., Scott, I., & Filed, D. (Eds.), *Art, Culture and Ethics in Black and White. Over 100 Years of DW Griffith's The Birth of a Nation (177-194)*. Manchester University Press.
<https://doi.org/10.7765/9781526164469.00015>
- Cea-Navas, A.I. (2022). The film industry: the Spanish short film, origin and evolution of a sector (1976-2020). *Área Abierta*, 22 (1), 9-30. <https://doi.org/10.5209/arab.78278>
- Cea-Navas, A.I. (2015). The representation of the social in Spanish short fiction films. *Opción: Revista de Ciencias Humanas y Social*, 4, 279-300.
- Fernández, M.A. (2014). The spread of rumour in digital media. In Sabes, F., & Verón, J.J. (Eds.), *Universidad, Investigación y Periodismo digital* (9, 19-36). Association of Journalists of Aragon.
- Fernández-Poncela, A.M. (2020). Infodemia: Rumours, fake-news, myths. *Sintaxis*, 35-55.
<http://doi.org/10.36105/stx.2020edespcovid-19.02>
- García-Marín, D. (2021). Fake-news and generation Z journalists. Post-millennial solutions against disinformation. *Vivat Academia*, 154, 37-63. <http://doi.org/10.15178/va.2021.154.e1324>
- Geltzer, J. (2017). Fake news & film: How alternative facts influence the national discourse. *Southwestern Law Review*, 47, 297-334.
- Gil, G., & Martínez, M.R. (2001). Survey methodology. In Navas, M.J. (Ed.), *Métodos, Diseños y Técnicas de Investigación Psicológica*. UNED.
- Gisbert, M., & Esteve, F. (2016). Digital Learners: The digital competence of university students. *La Cuestión Universitaria*, (7), 48-59. Available at:
<http://polired.upm.es/index.php/lacuestionuniversitaria/article/view/3359/3423>
- Glas, R., van Vught, J., Fluittsma, T., De La Hera, T., & Gómez-García, S. (2023). Literacy at play: an analysis of media literacy games used to foster media literacy competencies. *Frontiers in Communication*, 8, 1-16. <http://doi.org/10.3389/fcomm.2023.1155840>
- Gómez-Diago, G. (2022). Perspectives for addressing artificial intelligence in journalism education. A review of research and teaching experiences. *Revista Latina de Comunicación Social*, 80, 29-46.
<https://doi.org/10.4185/RLCS-2022-1542>
- Grigore, A.E. (2022). Human rights and artificial intelligence. *Ius et Scientia*, 8(1), 164-175.
<https://doi.org/10.12795/IESTSCIENTIA.2022.i01.10>
- Grijelmo, A. (2017). *The art of mass manipulation*. El País. Available at:
https://elpais.com/elpais/2017/08/22/opinion/1503395946_889112.html
- Konkle, A. (2020). Teaching Political Celebrity and Fake News in the Age of Trump... through Hindi Cinema. *Teaching Media Quarterly*, 8(1), 1-17.
- Lazer, D.M., Baum, M.A., Benkler, Y., Berinsky, A.J., Greenhill, K.M., Menczer, F. et al. (2018). The science of fake-news. *Science*, 359(6380), 1094-1096. <https://doi.org/10.1126/science.aao2998>
- Levitin, D.J. (2017). *Weaponized Lies. How to Think Critically in the Post-Truth Era*. Dutton.
- López-Ligero, M. (2015). *The Fake Documentary: Evolution, structure and arguments of the “fake”*. UOC.
- López, A. (2011). Uses and attitudes of future university students and teachers about information and communication technologies (ICT) and internet social resources. *Questión*, 31. Available at:
<http://sedici.unlp.edu.ar/handle/10915/34531>
- Lopezosa, C., & Codina, L. (2023). *ChatGPT and CAQDAS software for qualitative interview analysis: steps to combine OpenAI artificial intelligence with ATLAS.ti, Nvivo and MAXQDA*. Barcelona: Universitat Pompeu Fabra. Departament de Comunicació.

- Matei, A. (2022). *Analysis of the cinema consumption habits of the Students of the University of Salamanca*. Doctoral thesis. University of Salamanca.
- Miguel-Borrás, M., & Úbeda-Portugués, A. (2019). Ken Loach: The voice of the disinherited, hallmarks of a humanist. In Arévalo-Salinas, A.I., Vilar-Sastre, G., & García-López, M. (Eds.), *Comunicación y cambio social* (181-198). Tirant Lo Blanch-Tirant Humanidades.
- Nichols, B. (2010). *Introduction to Documentary*. Indiana University-Press.
- Parra-Valero, P., & Oliveira, L. (2018). Fake-news: A systematic review. *Observatory (OBS*)*, 55-78.
- Pérez-Escoda, A., Ortega-Fernández, E., & Pedrero-Esteban, L.M. (2022). Alfabetización digital para combatir las fake-news: Estrategias y carencias entre los/as universitarios/as. *Prisma Social*, 38, 222-243.
- Quevedo-Redondo, R., Gómez-García, S., & Navarro-Sierra, N. (2022). Learning to misinform: A prebunking strategy with newsgames for stimulating the acquisition of competences in the Bachelor's Degree in Journalism. *Anàlisi: Quaderns de Comunicació i Cultura*, 66, 95-112.
<https://doi.org/10.5565/rev/analisi.3447>
- Ramírez, L.Á. (2005). (Re)presentations of the real in the Spanish short film. In Ortega, M.L. (Coord.), *Nada es lo que parece*. Ocho y Medio.
- Rodríguez, P. (2018). *Artificial intelligence. How it will change the world (and your life)*. Deusto.
- Roscoe, J., & Hight, C. (2001). *Mock-documentary and the subversion of factuality*. Manchester University Press.
- Roubini, N. (2023). The AI Threat. *Horizons: Journal of International Relations and Sustainable Development*, (24), 26-45.
- Rouhiainen, L.P. (2018). *Artificial Intelligence. 101 things you need to know today about our future*. Encourage.
- Ruiz, A. (2014). *La operacionalización de elementos teóricos al proceso de medida*. col. Omado, Barcelona: Universitat de Barcelona. <http://hdl.handle.net/2445/53152>
- Salaverría, R., Buslón, N., López-Pan, F., León, B., López-Goñi, I., & Erviti, M.C. (2020). Disinformation in times of pandemic: Typology of Covid-19 hoaxes. *El Profesional de la Información*, 29(3), 1.
<https://doi.org/10.3145/epi.2020.may.15>
- Schmidt-Noguera, M. (2002). Realism and humour in contemporary cinema. *Área Abierta*, 3, 111.
- Thrun, S. (2017). *Artificial Intelligence - Q&A with Sebastian Thrun*. Udacity, YouTube. Available at: <https://www.youtube.com/watch?v=gyEyBZdUjCo>
- Vilches, L. (2011). *Communication research. Methods and techniques in the digital era*. Gedisa.
- Visauta, B. (1989). *Técnicas de investigación Social I: Recogida de datos*. Promociones y Publicaciones Universitarias.
- Williams, R. (2018). Fighting “fake news” in an age of digital disorientation: Towards “real news,” critical media literacy education, and independent journalism for 21st century citizens. In Gorrington, C.Z., & Thomas, P.L., *Critical media literacy and fake news in post-truth America* (53-65). Brill.
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