

Sustainable and Responsible Management

The Journal of Sustainable Business

ISSN 2724-4466



Volume No. 3, Issue No. 1 - 2022

Abruzzese Salute ETS

sustainable-and-responsible-management.org

Journal Information

Editor-in-Chief

Michele Samuele Borgia

Managing and Responsible Editor

Maurizio Cirillo

Copy Editors

Stefano Cesinaro

Katia Di Tommaso

ISSN

2724-4466

Online since 18th November, 2020

With authorization from the Court of Pescara no. 1 year 2020

Copyright Holder

Abruzzese Salute ETS

Via Umberto I, 78/80

65010 Cappelle sul Tavo (PE)

Italy

The impact of social networks and fake news on children's knowledge on environmental sustainability: Do children suffer from its portrayal online?

Mario Imperioso

Department of Political Science

University of Federico II di Napoli

E-mail: imperiosomario@gmail.com

Abstract

Children actually spend a lot of time using social networks and thus being online. The spread of fake news in them also has an impact on children. The aim of the research was to understand whether children still suffer from fake news on environmental sustainability. In this case, the main topics were those on the environment, pollution and sustainability. In order to proceed with the research, it was decided to use a questionnaire aimed at understanding public opinion on the subject to obtain a background from the research which could be also based on people's thinking about the topics. The research questionnaire was useful in understanding how users perceive the problem of children's exposure to fake news about environmental sustainability. This was followed by an analysis of the different narratives of the issue on social media and the relationship that children have with environmental sustainability from a social point of view. At the end of the research, sixty-eight children were interviewed with the purpose of understanding the concrete impact of false narratives on children's knowledge of environmental sustainability on social networks. The results therefore necessarily depended on a concrete observation of the children and what they thought, taking into account especially the role that school, family and other people play in addition to social networks alone.

Keywords – Children; Fake news; Environmental Sustainability; Digital Parenting; Child protection

Paper type – Academic Research Paper

Sommario

Il lavoro che segue ha come scopo principale quello di comprendere in che modo i bambini percepiscono, elaborano e formano una propria opinione sul tema della sostenibilità ambientale basandosi su quanto riferito loro dagli adulti e soprattutto tramite i contenuti che vengono postati sui *social networks*. L'analisi svolta è stata possibile grazie a un dialogo con i bambini che si sono resi parte attiva di questo progetto e hanno espresso la loro opinione in materia rendendo, quindi, concreto un approfondimento della tematica. I risultati dell'analisi, così come la metodologia utilizzata e la teoria applicata, hanno tenuto conto dell'ambiente in cui i bambini sono stati educati e cresciuti.

Parole chiave – Bambini; Notizie false; Sostenibilità ambientale; Genitorialità digitale; Protezione dei minori

Tipo di articolo – Articolo accademico

Article history:

Received 28 February 2022

Received in revised form 21 April 2022

Accepted 24 April 2022

Available online

1 Introduction

In recent years the Internet has undergone a process of evolution in which it has become intertwined with the real world in a continuous inter-dependence (Kellerman, 2014). More specifically, it has led to the rise of social networks, which are starting to influence how children learn (Kanter & Litow, 2009). Indeed, researchers highlight the importance of social networks to educate children and protect them in their growth (Smith & Christakis, 2008). This role intersects with the duties recognised as “community duties towards children”. People in the community fulfil their duties towards children also using the Internet (World Health Organization [WHO], 2016).

Particularly, social networks can play an important role in educating children about environmental sustainability (Little, 2010). However, social networks have also become a fertile ground for the dissemination of news that are either fabricated or not entirely based on facts (Nir, 2005; Barnes et al., 2016). This has important consequences for children as they grow with wrong knowledge of issues that could potentially affect them profoundly (Tremblay, 2010). For instance, if parents allow a child to grow up believing in the existence of something that has no scientific basis, such as the total absence of human culpability in environmental pollution, the child will automatically have no awareness of its surroundings.

A lot of research has been done on the social impact of fake news and the use of social networks (Nagi, 2018; Burbach et al., 2019; Olan et al., 2022). Similarly, specific research has been carried out on the impact of fake news on social networks on children and others (Pérez-Escoda et al., 2021). In addition, it is also possible to find research on fake news and its impact on sustainability (Özdemir, 2012; López & Share, 2020).

However, less is known about the impact of fake news on children’s knowledge of environmental sustainability. In addition, there is still no real picture of how widespread fake news among children relates to the behaviour and knowledge and education of the children’s parents on environmental sustainability. In this regard, the aim of the research is to identify the impact that fake news has on children’s knowledge of environmental sustainability.

2 From social networks to environmental sustainability: impact of different narratives on children's knowledge

2.1 Investigating social networks and its relationship with environmental sustainability

This section of the research aims to review the existing literature on the relationship between environmental sustainability and social networks and then between these two components and children considering the Internet as a second action space (Kellerman, 2014). Primarily, it is mandatory to introduce the concept of social networks. It is a type of web service useful to establish a virtual connection between people with similar interests, backgrounds, and activities. In particular, the role played by social networks is essential. According to Barnes et al. (2016), social networks can profoundly influence human behaviour, which is the primary force driving environmental change. However, empirical evidence linking micro-level social interactions to large-scale environmental outcomes has remained scarce.

Wheeler and Quinn (2017) point out that social platforms themselves have deployed strategies to disseminate information and raise awareness on the topic of environmental sustainability. While this practice can have positive consequences, the large-scale spread of fake news and “trust” in a particular category of the so-called “influencers”, who, regardless of their role, carry out misinformation that has a negative impact on environmental sustainability itself in contrast with activists who spread on social network informations to sensibilise on environmental sustainability (Lima Quintanilha et al., 2019).

It allows its users to find new friends and expand their circle of friends. Data sharing is another key feature of a social network where users are able to share their interests, videos, photos, activities, and so on (Rathore et al., 2017). Due to social networks, people are able to live in the digital world on a daily basis and stay in touch with other network users (Wallis, 2010). In addition, it can be argued that social networks have actually enabled the creation of virtual communities (Baruah, 2012). From this point of view, Facebook, Instagram, TikTok, LinkedIn, Twitter and others have created large communities and sub-communities governed by private individuals who dictate the laws and allow the use of the service.

One example is Facebook, which had a generic virtual community of around 3.5 billion users in the first quarter of 2021¹, which is then divided into different sub-communities based on shared interests within the application. They can be formed for instance by people who have a common interest in dolls, or anime and manga, or the same political interest. It is also the case that a sub-community is formed by people who follow an influencer on Instagram and comment on his, her or their events (Liu, 2011). At the same time it is possible to create sub-communities under the profile of a politician. Personalities of

¹<https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-usersworldwide/>

this importance can easily influence public opinion on different aspects, but a prerequisite is that the person or organisation is relevant, interesting and important (Kwon et al., 2014). The way in which a news story is told, discussed, presented or described by one of these trusted personalities or entities has a different impact on the wide audience that follows it. It is also important to highlight that this depends on the degree of independence and autonomy of thought of the user. However, at the same time it is known that although these are determining factors, continuous exposure to a one-sided narrative has concrete effects on the opinion of the exposed person.

Furthermore, inside communities and sub-communities on social networks, there are some security threats that put the individual at risk. Usually, these threats are classified into three main categories. The first includes multimedia content threats where the multimedia data shared on social networks are used to expose the users themselves (Rathore et al., 2017). Secondly, there are traditional threats where traditional attack techniques or weaknesses in the social infrastructure are used to attack users of the same platform (*Ibidem*). The third category includes social threats where attackers establish social relationships with users to put them at risk (*Ibidem*). A fourth category could be added to this classification, namely that of the spreading of misinformation.

2.2 Environmental sustainability as a necessity for living

The concept of “environmental sustainability” has been developed and disseminated as a definition of “maintaining natural capital” and as a separate, yet related, concept to both social and economic sustainability (Goodland, 1995). Environmental sustainability is seen as the ability to make efforts to maintain the qualities that are valued in human life in relation to our surroundings (Sutton, 2004). In this field, environmental sustainability can be viewed as the capacity that the natural environment has to maintain living conditions for people and other species, and the efforts made by humans not to affect their surroundings (Liu et al., 2007). Threats to these aspects of the environment mean that there is a risk that they will not be maintained. For instance, large-scale extraction of non-renewable resources (such as minerals, coal and oil) or damage caused to the natural environment can create threats of serious decline in quality or destruction or extinction (Sutton, 2004).

The subject of environmental sustainability has gained increased attention among researchers, politicians and the society. In particular, people have begun to realise that in various sectors, be they micro-sectors or more wide-ranging, there is a need for immediate action that can have a positive effect on environmental protection (Liang et al., 2019). Here too, social networks have played a vital role in spreading civic awareness of environmental sustainability (Bodin & Crona, 2009). To an even greater extent, the role played by Greta Thunberg (2019) and activists who, by gaining popularity on social

networks through their own communication channels, have initiated a real change of course towards a global transition towards environmental sustainability. However, social networks can also be ambivalent and present almost opposite opinions (Nir, 2005). It would therefore depend on who is disseminating the information, how truthful it is and how it is conveyed. Bearing this in mind, what follows will aim to analyse the real impact that social networks have on environmental sustainability in terms of knowledge and opinion.

2.3 The environmental sustainability portrayal in social networks

With regard to the specific relationship between social networks and environmental sustainability, emphasis must be placed on how sustainability is described on social networks. It depends of course on several factors. Although many social networks, such as those of the Meta group, often emphasise environmental sustainability and initiate actions in this direction (Wheeler & Quinn, 2017), social networks increasingly disseminate information that is contrary to each other (Barnes et al., 2016). Specifically, it is necessary to take into account the fact that information on social networks can quickly become widespread and have a wide social impact before it is removed (Vosoughi et al., 2018).

Furthermore, social media attacks on environmental activists can have a substantial impact on the conception of environmental sustainability. Belittling the role of a person makes him/her lose credibility and consequently also the battle itself carried out by the person loses credibility (Ellison & Boyd, 2013). Similarly, attacks on non-governmental organisations, such as Greenpeace, can negatively influence the public's perception of the users (Özdemir, 2012). Particularly striking was the alleged statement of Bjorn Okern, former director general of the Norwegian office, who compared Greenpeace management to a pyramid structure, where everything is decided at the top and where every penny of the organisation was spent on "other things" and not on the environment (Furlanetto, 2013). Such a description of the organisation, spread on social media, leads to a belittling of the organisation's role and struggles. By ridiculing the organisation, users might no longer trust it and consequently the campaigns it carries out.

2.4 Relations between children and sustainability

According to the World Health Organization (2017) while children in low-income populations living in marginal areas are more susceptible to flooding and drought, the effects of ambient air pollution, rising global temperatures and similar events have the potential to affect everyone. According to WHO (2017), by the time these impacts are felt, the damage to children's environmental health will already be

widespread. Thus, children are by far the first to bear the consequences of faults that do not really belong to them (Tremblay, 2010) since the problem of environmental sustainability has arisen because of damage created by humans over generations (Goodland, 1995; Salvi, 2007).

In order to educate children about environmental sustainability and to protect them from taking the same mistakes that in the past led to the pollution of our seas and environment in the future, there is an increasing number of schools and extracurricular awareness-raising campaigns aimed at children (Haury, 1998; Flowers & Chodkiewicz, 2009). Similarly, in the specific case of Italy, there is an increasing use of books that deal with this topic in their syllabus, targeting both younger children and those approaching adolescence (Buccolo & Allodola, 2021). In Italy, in line with the provisions of the UN 2030 Agenda and the 17 SDGs (Sustainable Development Goals), Civic Education includes learning about building inclusive environments and lifestyles that respect the fundamental rights of individuals, such as health, mental and physical wellbeing, food security, social equity, decent work, quality education and the protection of the tangible and intangible assets of communities (Buccolo & Allodola, 2021). According to Unicef's INSPIRE strategy² (2016), such work properly carried out in schools can have a more than positive impact on children's education. This type of positive contribution can therefore also manifest itself in relation to the environment and the promotion of environmental protection and environmental awareness among children, thanks in particular to the new education mechanisms promoted by schools (Santerini, 2010).

In addition, social networks can play a vital role in educating children on sustainability (Little, 2010). While some social networks themselves are committed to environmental protection, some of those who frequent them do not always support environmental sustainability. The impact that erroneous narratives of environmental sustainability on social media have on children, and at the same time the role played by the parental component and the trust that children have in others, will be the subject of the following research study. Thanks to the Internet and social networks, which have made everything more fluid, the high cost of creating information content has been reduced. It is now much easier for any person with a smartphone to create, write, share a film containing false or invented, unverified news (Offidani, 2021). In addition to what was stated before, there is also evidence that children themselves now spend a lot of time on the Internet and it is clear that exposure to fake news also passes for them.

² The INSPIRE strategy is the strategy implemented by organisations such as UNICEF and WHO to end violence against children. This means ways in which children can be helped in different social contexts. In this case, it is about how the school and educational context can put an end to the constant attacks on children's education through narratives.

3 Methodology

3.1 Sample and sampling techniques

A total of 68 children aged between 10 and 14 years were interviewed. A convenient sampling technique was used. Firstly, the 68 children were selected without distinction of their origins, families and health status. Within them, 4 children were selected for further analysis with purposeful sampling technique. These 4 children were selected by virtue of the answers they gave to the interview questions previously carried out.

The 68 children who were taken into consideration are drawn from the children whose parents gave their consent to the interviews. All 68 children are Italian and attend secondary school according to the Italian educational system. All of them attend precisely the same school and are therefore taught by the same circle of teachers. Moreover, some of the children who participated in the interviews live in particular and delicate family contexts. All the children's parents live in the same municipality of 12,000 inhabitants. The children selected for the interviews therefore live in the same school and extracurricular contexts.

It must necessarily be specified that the children under consideration come from very specific backgrounds. Some of them live in family contexts that are targeted by institutional social service bodies for family welfare issues. The children therefore come from a difficult economic background and are supported by the social welfare office and mostly participate in a school tutoring project.

3.2 Research tools and procedures

As a research procedure it was decided to use structured interviews in a neutral environment. The interviews took place in the absence of the other children in a primary school classroom. The children were asked to have a dialogue within which to answer specific questions. 6 questions were considered the primary to be asked but others were asked to understand potential correlation with other aspects of their life. For instance, each child who was asked the questions, at the end of the penultimate and last question, were asked each time "from whom they had learned what they were asked in order to give an answer". Specifically, they were always told: "Now that you have answered this question in this way, can you tell me whether you learned this, on the Internet or elsewhere?".

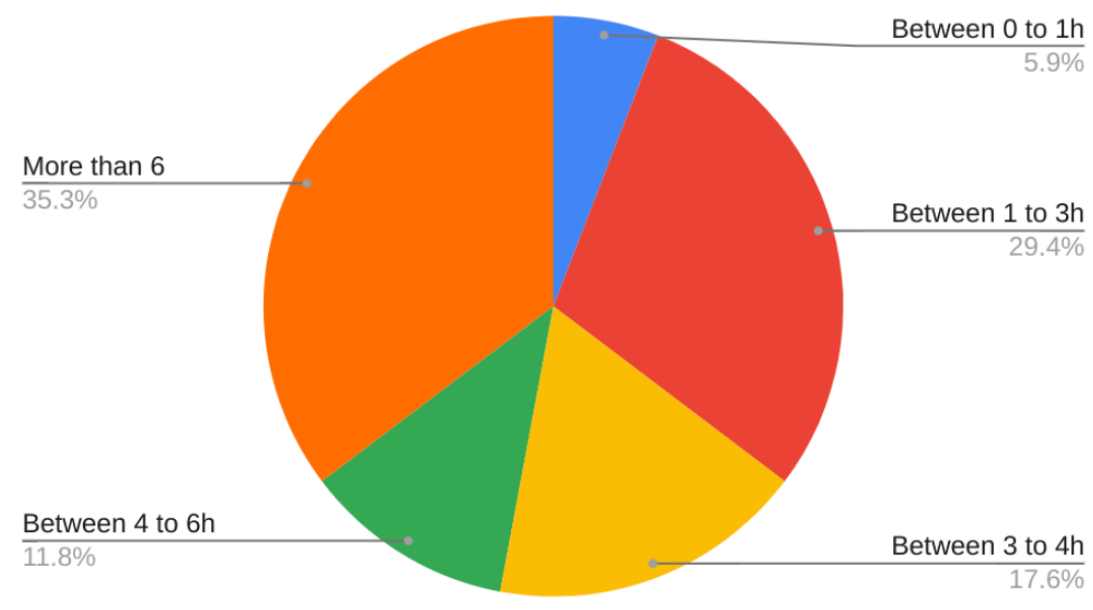
The main questions, asked during the interviews, were grouped in graphs while those asked outside the main questions were noted and analysed. The data will be processed according to descriptive statistics of the data collected through the interviews. At the same time possible correlations of the

collected data will be analysed. Specifically, the method consisted in interviewing all 68 children and then asking further questions in a follow-up interview to 4 selected children.

4 Do children suffer from fake news on sustainability online? Analysis of the interviews

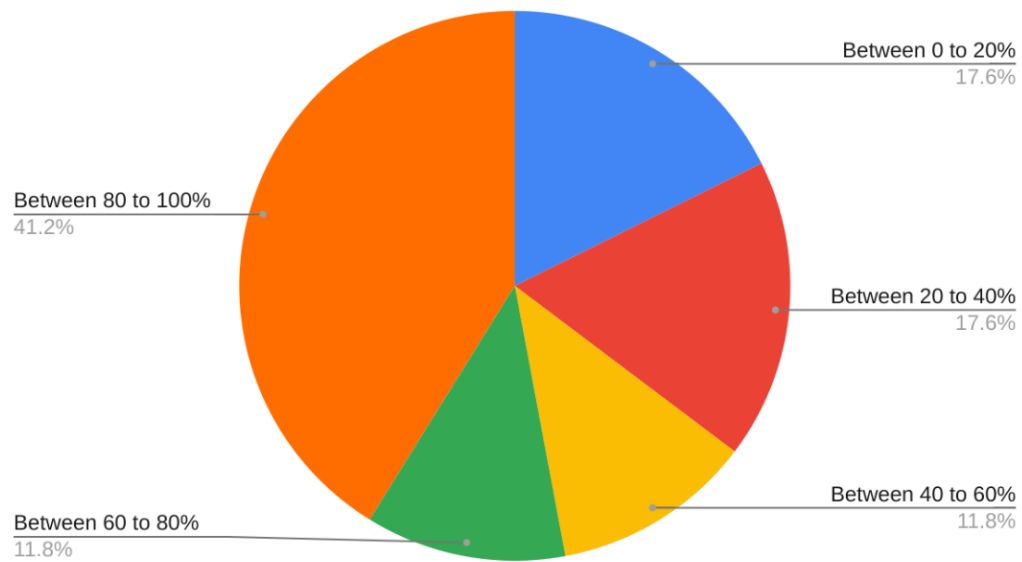
When asking the children these questions, a neutral environment was used in which they could not be influenced in any way. With reference to Figure 1 and 2, the answers show that firstly parents imposed on them a precise amount of time for using the Internet and that more than 40% of children continue to use the majority of their time online using social networks. Furthermore there is still a small percentage of children who believe that everything they see on social media is true (11.8%) as shown in Figure 3.

Figure 1 - How much do your parents let you use your mobile phone or computer?



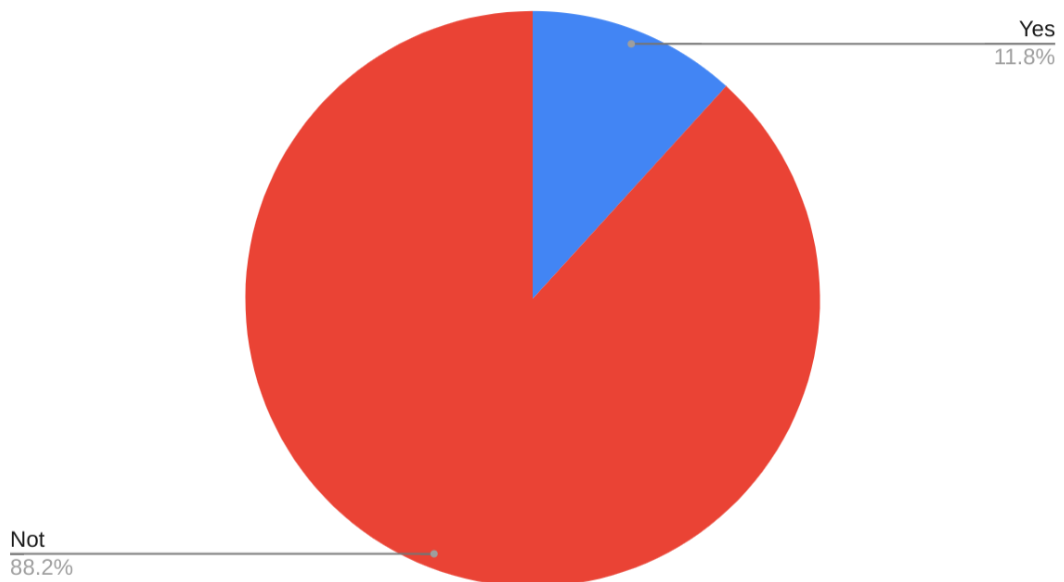
Source: our elaboration

Figure 2 - How much of this time do you spend on TikTok, Instagram or Facebook?



Source: our elaboration

Figure 3 - Do you think everything you see on social media is true?



Source: our elaboration

In this case, reference was made to Instagram, Facebook and TikTok. However, the interviews revealed that the majority of children, more than half, are abandoning the Facebook platform in favour of the TikTok platform. Many of the children disliked having to talk about Facebook because it was considered too outdated. Similarly, some of the children talked about how they consider TikTok to be more truthful than other social networks.

The children have, with their words, confirmed what Laor (2022) said through his own studies that there is a migration of users from Facebook to TikTok and Instagram. According to the children interviewed, the latter platform is very popular among young people. In this case it is very useful to remember that in these years the TikTok platform is becoming more and more important in the education of children outside school and they tend to be more and more influenced by it. This is in fact strongly linked to the studies of Triwidyati and Pangastuti (2021), who investigated precisely how TikTok manages to influence people's behaviour and at the same time guarantee their freedom of expression.

The 68 children were then asked direct questions aimed at understanding who they trust about environmental sustainability issues. For instance, they were asked about how much they trusted, in hipotesis, a scientist and what he or she says on social channels. In this case, 5.9% said they would trust the scientist even if he or she had just said that pollution is a fiction as shown in Figure 4. Specifically, the channel that was taken into account for the question was Facebook.

Many of the children during the interview responded that they do not tend to listen much to scientists found online because they do not even know them. In this case there were many statements from the children which are useful to understand their position.

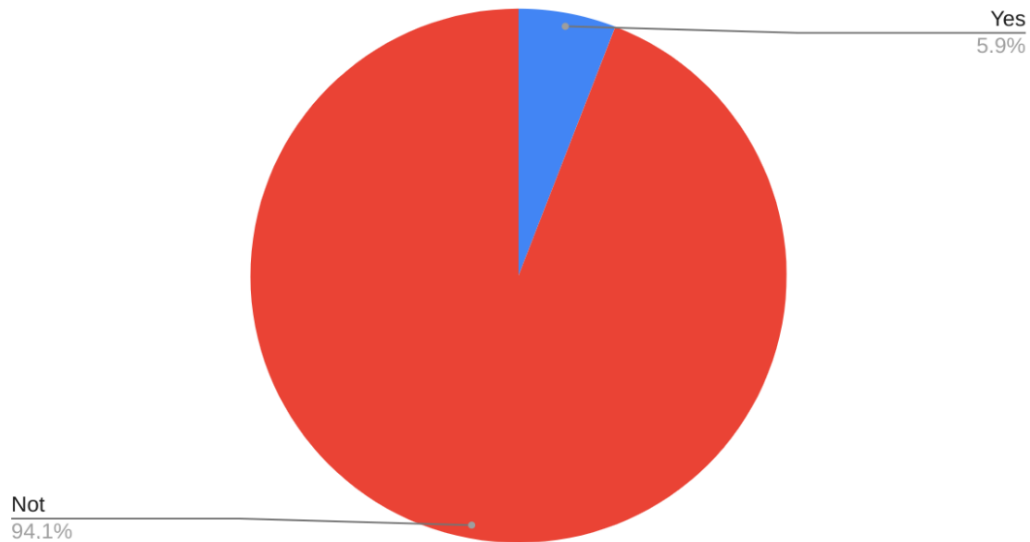
"I don't trust a person who says something online that in the end I don't even know who he is" [C1].

"Why should I trust a person who says something online that is completely different in books?" [C2].

Fewer than a dozen of the children, however, paused to think about whether they would believe the scientist if he had millions of followers on social media. When asked to comment more generally on the issue of followers, these few children talked about how much they might trust a person that so many other adults trust, or even children their own age. Again some very important words were repeated which help to understand what the children really think about it.

"If he [the scientist] is followed by millions and millions of people then he should be someone you trust a lot, but I don't know if we should really listen to him in this case. After all, what would he know? But what if he's a scientist who is followed by so many people?" [C3].

Figure 4 - A scientist on Facebook said that pollution is a false thing and that we are not guilty of polluting the environment. Are we supposed to believe it if he said that?



Source: our elaboration

On the other hand, when it comes to spreading the news about environmental sustainability, most of the children interviewed, more than 75%, said that they were interested in the topic and that people should do their part.

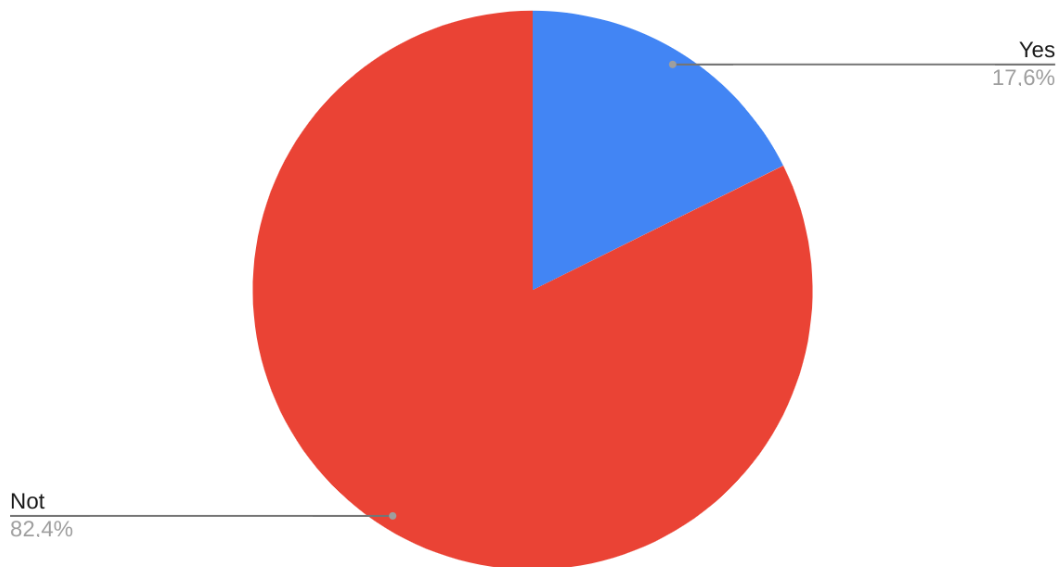
“If I am twelve years old and I know that I must not throw plastic bottles on the grass, it means that an adult must also know how to do it” [C4].

“Even on Facebook there are videos of the effects of pollution, people have to watch them to understand what happens if they pollute” [C5].

At the same time, however, almost all of them said that they do not inform themselves on social media about this issue, or at least that they do so only a very small part of the time. Most of the time this information, according to their words, is seen from the posts shared by other people and which they see on their social media.

A slightly different scenario arises when it comes to trusting a friend who spreads such news. In this case, 17.6 % answered that they trusted the news spread by their friend as shown in Figure 5.

Figure 5 - You read on Facebook that a friend of yours wrote that environmental pollution is a hoax. He read it on the Internet and maybe even shared a video saying this. So do we believe him?



Source: our elaboration

In addition, of this percentage, more than 50% answered that they trusted a “close friend” more than a “friend”. Regarding trusting friends who share such news online, many of the children stated that it also depends on how much this friend “inspires confidence” in them. In fact, many of them stated that if the friend is older than them and maybe they know that *“he/she studies in the schools of the older ones”* [C6] then he/she is more trustworthy. On the other hand, if he/she is considered as a *“slacker who doesn’t even study at school”* [C7] then it is more difficult for them to trust him/her, even if they have a close relationship.

The data show that children have developed their own awareness of environmental pollution and thus of sustainability. What has been implemented in schools, thanks to the study of pollution and the various initiatives, proves useful as more than half of the children who took part in the interviews answered that they had learned these things at school.

“If I have learned anything about the dangers of pollution, it is mainly thanks to what I learned at school and from my teachers” [C8].

“At school we also did activities sometimes to understand what pollution is and how we and our parents can do our part” [C9].

These statements by the children and the way in which they expressed their willingness to do their part again confirms what Baker et al. (2021) analysed, which showed the way in which children were concerned about environmental pollution and also confirms the same perceptions that parents and teachers have of children’s behaviour about environmental sustainability.

The school plays an important role in this, especially since the interviews showed that most children have great confidence in what they are taught at school. However, many of them stated that they do not listen to teachers when they speak because they *“do not like them”* as said by more than one child. On the contrary, almost all of them showed great confidence in what is studied in books. At the same time, however, very few said that they had been told by their parents statements to make them not believe much in books.

“My parents told me that not everything that is written in books is true and that the pages of the books are written by people who may say something to make us believe it” [C10].

“Dad says that many things in books are written by those in charge and that they want us to know these things in this way” [C11].

Furthermore, the questions that were asked were useful to understand if there were any specific cases among the children interviewed on which to focus the research attention. In fact, of the 68 children who were interviewed, for the purpose of the research analysis 8 (11.8%) children stated that they disagree poorly that people are the one contributing to global warming and 4 (5.9%) of them stated that they quite agree with the fact that the hole in the ozone layer is not our fault. The data are shown in Figure 6 and 7. These 4 children were specifically considered for having further questions. These represent a unique case compared to the others. Referring to each of the questions posed to them to start a dialogue, the 4 children answered that they trust a scientist who says on Facebook that pollution is a hoax.

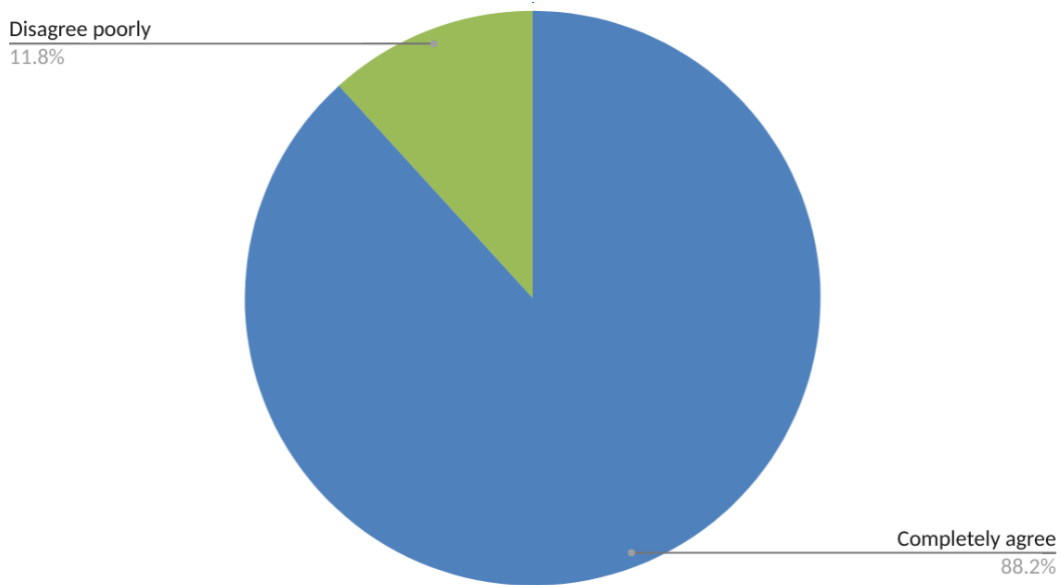
“Yes, I would trust him because he can prove it for sure” [C12].

“I trust the scientist because I heard about it” [C13].

“I trust the scientist because he has studied about it” [C14].

“If he said that I think I should trust him” [C15].

Figure 6 - How much do you agree that we are the ones contributing to global warming?



Source: our elaboration

These same 4 children (together with 4 others) declared that they believe at the same time that everything written on social networks is real.

“Yes I always follow news online because they are real, I also watch videos on Youtube and Facebook” [C12].

“Obviously because we share always true things online about ourselves and the others” [C13].

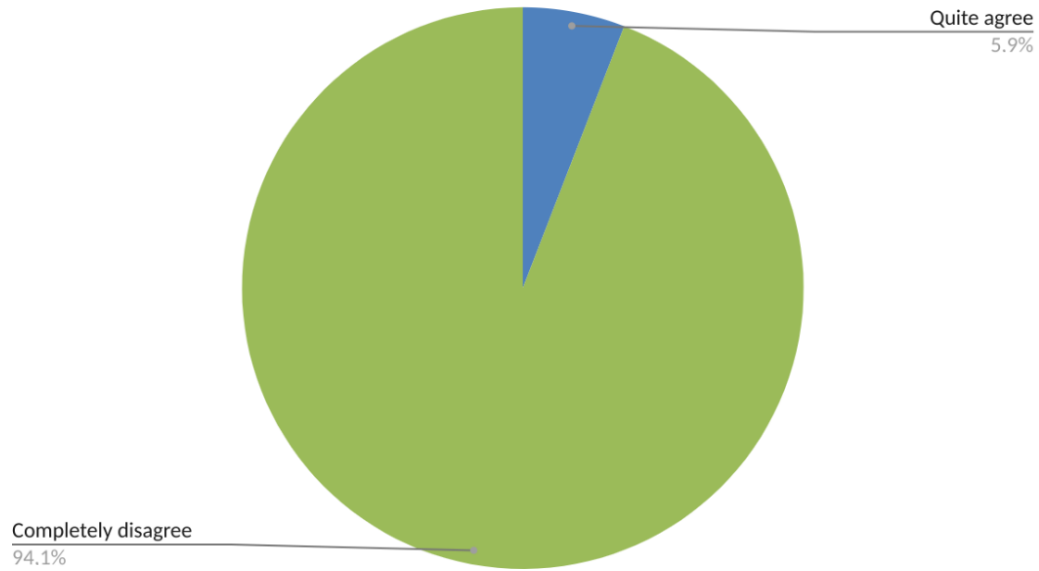
“I think yes we should trust” [C14].

“Yes, why not” [C15].

Not only that, these same 4 children answered that they trust a friend who writes on the Internet that environmental pollution is a hoax along with 8 other children.

“I trust a friend, especially if we are close friends, we don’t lie to each other. If he writes something online he will surely have done some research. Being older, he does more research for adults than I do” [C12].

Figure 7 - How much do you agree that it's not our fault that there's a hole in the ozone layer?



Source: our elaboration

“Yes I trust him because if he posts something online he is sure of it” [C13].

“Generally speaking I think so, we should trust each other in the end and if you publish something online you do it consciously right?” [C14].

“Yes, especially if we are close friends” [C15].

In addition, the same 4 children disagree with the fact that we people are the only beings on the planet who have contributed to the growth of pollution.

“The pollution is not my fault and I don't think my parents are either. In the end we don't do anything to pollute” [C12].

“Why only human beings? I don't think so. There are so many things we may not know” [C13].

“I don't think so, in the end why should we be the ones to have contributed to the pollution” [C14].

“Only somebody, not everybody. Why we must be guilty of something we did not” [C15].

Finally, 2 of the 4 children who are now the subject of the analysis answered that they learned what they know from the Internet, while the other 2 answered that they learned these things from school, from the Internet and by talking sometimes with their family and someone else not specified.

“I am bored at school, I go to school to have fun and stay with my friends. I can learn from Internet by watching videos and what the others say online” [C12].

“I always stay online because in this way I can stay in contact with my friends and do research if I want. At school I am always with my friends and I did not open so much books” [C13].

“I study at school and do research online and follow what others share on the Internet. Most of all I always heard what adults like my father says about argument very important” [C14].

“I learn things at school and online, but of course if there are talks between adults and I happen to hear them I believe the things they say, don't I? At the end of the day they're older people than me” [C15].

For a complete picture of the answers of children about “where they learned the topic about environmental sustainability” it is possible to see them in Figure 8. It is possible to distinguish between 2 different cases. In the first case, there are two children who state that they trust anyone online who tells them something false about pollution, that they believe everything is true online and that they learned what they know about pollution through the Internet. In the second case, they gave the same answers, but distinguished themselves by stating that they learned what they know from school, the Internet and other people.

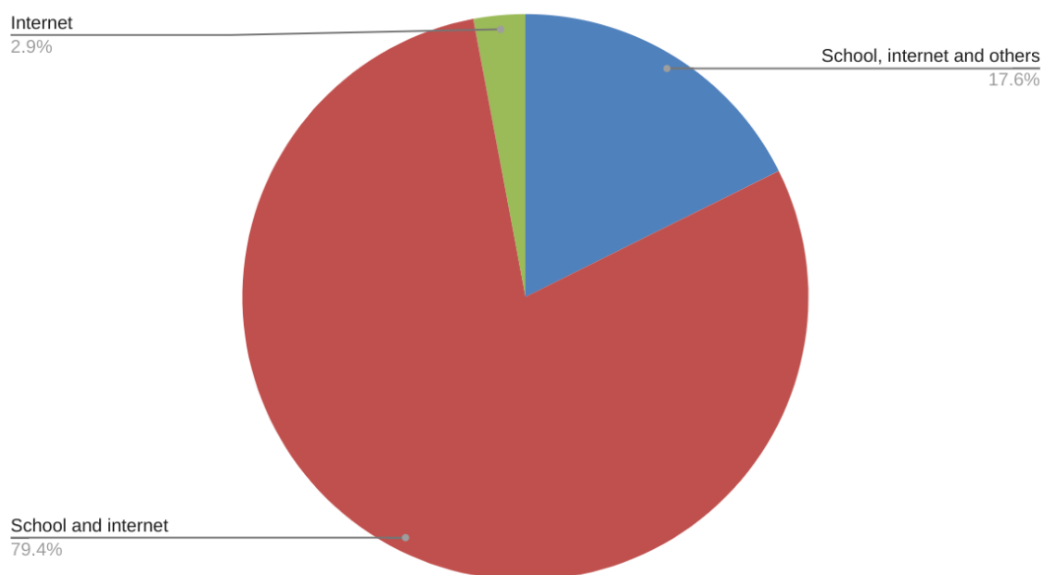
The first case shows us that, although in a smaller percentage, there are still children who completely rely on what they learn on the Internet. In this way they have fallen into one of the disadvantages of the Internet due to false narratives on certain topics (Dumitru, 2020), growing up with incorrect knowledge of facts. In the second case, however, the children fell victim to wrong narratives on the Internet (Dumitru, 2020) but also to the ignorance on the topic of environmental sustainability of people outside the school and virtual environment. The second case thus confirms Trevors' theory (Trevors, 2010) that human ignorance also produces concrete effects on pollution and knowledge of pollution itself. These 4 children in particular were then asked further questions which left room for a dialogue with them. The first child, through a dialogue with his interlocutor, declared that *“at home they hardly ever talk about environmental sustainability issues” [C12]*, that his *“parents do not pay much attention to waste sorting” [C12]* and that he *“spent most of their time on the Internet without talking much among themselves” [C12]*. Another child stated approximately the same things, emphasising that sometimes he has heard people say that *“it is all a hoax” [C15]* and that *“even Trump has said that pollution does not exist” [C15]*. The other two children pointed out how confusing the topic of pollution

and environmental sustainability can sometimes be, as one of them stated that *“the news talk about it in one way, on social media you get a lot of different news and adults don’t make you understand”* [C13]. One of the four children also stated that one of his parents had said that the pollution in Campania (Italy) was *“something that was written in the bible that would happen”* [C14].

Responses of this kind suggest that fake news ties in with what is already rampant ignorance about environmental sustainability. In the same way, however, the fake news that is told on social media is the same as that told to children by adults. In this case, therefore, a strong link is shown between fake news and adults themselves in the impact that these fake news have on children, lending credence to and confirming the theories put forward by Howard et al. (2021) who further made it known with their findings how parental ignorance leads to incorrect knowledge for children. In this case, it is possible that the fake news was more effective because the parents themselves thought what the fake news said, at least in the words reported by the children.

The four children in question represent a small percentage of the total, less than 6%, but it should also be remembered that at the same time almost 65% of the children interviewed spend more than 3 hours a day on the Internet and specifically the 4 children interviewed spent more than 6 hours online.

Figure 8 - Can you tell me whether you learned this, on the Internet or elsewhere?



Source: our elaboration

Although only four children were identified from the interviews as having suffered most from the harmful effects of false narratives on social media about environmental sustainability, potentially others may also suffer in the long term. All of them are more susceptible to the disadvantages present online according to Bremer's (2005) theory that continuous exposure to the Internet over the long term has significant disadvantages in terms of false knowledge and ignorance. In support of this, it should be noted that most of the children stated, during the interview, that they often had headaches, problems with their eyesight and, above all, that they often replaced what they had to study in books with a quick google search showing also Internet addiction as outline by Leung and Lee (2012).

Both psychologically and physically, the data show that no child is totally immune to social or even false online narratives on a topic as sensitive as environmental sustainability. A very large majority of children said they did not want to believe in fake news about environmental sustainability. Based on the questions they were asked, almost all of them emphasised how much they would not believe it. At the same time, however, they opened up reflections on "who is the person they would trust on social media" and how they would or would not believe their parents. Finally, the migration from one social to another, such as the transition of younger people from Facebook to platforms such as Instagram and TikTok puts the emphasis on how much a person does not become trusted on Facebook but could be trusted on, for instance, TikTok.

5 Conclusions

The data shows the extent to which children still trust people on social media who can potentially spread false news about environmental sustainability. Children were shown to resent incorrect narratives on the Internet when almost 12% disagreed that we are the only ones contributing to global warming, while almost 6% agreed that it is not our fault that the ozone hole exists. Both topics are indeed studied at school, but more than 80% said they learned these things not only at school but also on the internet while almost 3% said they learned them only on the Internet.

The data analysed and the specific case of the four children discussed in the previous section showed that the phenomenon of fake news has a less widespread impact, tending to influence a much smaller percentage of children. At the same time, however, when it acts on children, even if they are very few, it tends to influence their knowledge to such an extent that they have a thought that is completely unfounded. It should also be noted that almost 3% of the children stated that they learn about environmental sustainability only from the Internet and that these 3% are among those who answered the previous questions with incorrect knowledge about environmental sustainability along

with a few other children. All this implies that children, even if a very small percentage, still allow themselves to be influenced in a very profound way by fake news.

Research has shown that fake narratives impact children's knowledge of environmental sustainability, even if the number of children affected is very small. The analysis set up could be further developed by an in-depth analysis of the fake news phenomenon as spread on different social networks. Specific cases could be represented by social networks that are now firmly established in people's lives, such as Facebook and Instagram, and social networks that are still developing, such as TikTok and Twitch.

References

- Baker, C., Clayton, S., & Bragg, E. (2021). Educating for resilience: Parent and teacher perceptions of children's emotional needs in response to climate change. *Environmental Education Research*, 27(5), 687-705. <https://doi.org/10.1080/13504622.2020.1828288>
- Barnes, M. L., Lynham, J., Kalberg, K., & Leung, P. (2016). Social networks and environmental outcomes. *Proceedings of the National Academy of Sciences*, 113(23), 6466-6471.
- Baruah, T. D. (2012). Effectiveness of Social Media as a tool of communication and its potential for technology enabled connections: A micro-level study. *International Journal of Scientific and Research Publications*, 2(5), 1-10. http://www.ijsrp.org/research_paper_may2012/ijsrp-may-2012-24.pdf
- Bodin, Ö., & Crona, B. I. (2009). The role of social networks in natural resource governance: What relational patterns make a difference? *Global Environmental Change*, 19(3), 366-374.
- Bremer, J. (2005). The internet and children: Advantages and disadvantages. *Child and Adolescent Psychiatric Clinics*, 14(3), 405-428. <https://doi.org/10.1016/j.chc.2005.02.003>
- Buccolo, M., & Allodola, V. F. (2021). Lo Sviluppo Sostenibile nel nuovo curriculum di Educazione Civica: un'esperienza didattica nella scuola Primaria. *Formazione & Insegnamento. Rivista internazionale di Scienze dell'educazione e della formazione*, 19(1), 392-405. https://doi.org/10.7346/-fei-XIX-01-21_34
- Burbach, L., Halbach, P., Ziefle, M., & Calero Valdez, A. (2019). Who shares fake news in online social networks? In *Proceedings of the 27th ACM Conference on User Modeling, Adaptation and Personalization* (pp. 234-242). <https://doi.org/10.1145/3320435.3320456>
- Dumitru, E. A. (2020). Testing children and adolescents' ability to identify fake news: A combined design of quasi-experiment and group discussions. *Societies*, 10(3), 71. <https://doi.org/10.3390/soc10030071>
- Ellison, N. B., & Boyd, D. (2013). Sociality through social network sites. In W. H. Dutton (Ed.), *The Oxford Handbook of Internet Studies* (pp. 151-172). Oxford University Press.
- Flowers, R., & Chodkiewicz, A. (2009). Local communities and schools tackling sustainability and climate change. *Australian Journal of Environmental Education*, 25, 71-81. <https://doi.org/10.1017/S0814062600000410>

- Furlanetto, V. (2013). *L'industria della carità: da storie e testimonianze inedite il volto nascosto della beneficenza*. Chiarelettere.
- Goodland, R. (1995). The Concept of Environmental Sustainability. *Annual Review of Ecological Systems*, 26, 1-24.
- Green, M., & Somerville, M. (2015). Sustainability education: Researching practice in primary schools. *Environmental Education Research*, 21(6), 832-845. <https://doi.org/10.1080/13504622.2014.923382>
- Haury, D. L. (1998). *Education for environmental sustainability*. ERIC Clearinghouse for Science, Mathematics, and Environmental Education.
- Howard, P. N., Neudert, L., & Prakash, N. (2021). *Digital misinformation/disinformation and children*. University of Oxford Steven Vosloo, UNICEF.
- Kanter, R. M., & Litow, S. S. (2009). *Informed and Interconnected: A Manifesto for Smarter Cities* (Working Paper No. 09-141). Harvard Business School. <https://ssrn.com/abstract=1420236> or <http://dx.doi.org/10.2139/ssrn.1420236>
- Kellerman, A. (2014). *The internet as a second action space*. Routledge.
- Kwon, K. H., Stefanone, M. A., & Barnett, G. A. (2014). Social network influence on online behavioral choices: exploring group formation on social network sites. *American Behavioral Scientist*, 58(10), 1345-1360. <https://doi.org/10.1177/0002764214527092>
- Laor, T. (2022). My social network: Group differences in frequency of use, active use, and interactive use on Facebook, Instagram and Twitter. *Technology in Society*, 68. <https://doi.org/10.1016/j.techsoc.2022.101922>
- Leung, L., & Lee, P. S. (2012). Impact of internet literacy, internet addiction symptoms, and internet activities on academic performance. *Social Science Computer Review*, 30(4), 403-418.
- Liang, D., Hou, C., Jo, M. S., & Sarigöllü, E. (2019). Pollution avoidance and green purchase: The role of moral emotions. *Journal of Cleaner Production*, 210, 1301-1310. <https://doi.org/10.1016/j.jclepro.2018.11.103>
- Lima Quintanilha, T., Torres da Silva, M., & Lapa, T. (2019). Fake news and its impact on trust in the news. Using the Portuguese case to establish lines of differentiation. *Communication & Society*, 32(3), 17-33. <https://doi.org/10.15581/003.32.3.17-33>
- Little, J. W. (2010). *Social network theory and educational change*. Harvard Education Press.
- Liu, B. (2011). Social network analysis. In *Web data mining* (pp. 269-309). Springer. https://doi.org/10.1007/978-3-642-19460-3_7
- Liu, J., Dietz, T., Carpenter, S. R., Folke, C., Alberti, M., Redman, C. L., Schneider, S. H., Ostrom, E., Pell, A. N., Lubchenco, J., Taylor, W.W., Ouyang, Z., Deadman, P., Kratz, T., & Provencher, W. (2007). Coupled human and natural systems. *AMBIO: A Journal of the Human Environment*, 36(8), 639-649. [https://doi.org/10.1579/0044-7447\(2007\)36\[639:CHANS\]2.0.CO;2](https://doi.org/10.1579/0044-7447(2007)36[639:CHANS]2.0.CO;2)
- López, A., & Share, J. (2020). Fake climate news: How denying climate change is the ultimate fake news. *Journal of Sustainability Education*, 23. http://www.susted.com/wordpress/content/blog-post-fake-climate-news-how-denying-climate-change-is-the-ultimate-in-fake-news_2020_04/
- Nagi, K. (2018). New Social Media and Impact of Fake News on Society. *ICSSM Proceedings*, 77-96. <https://ssrn.com/abstract=3258350>
- Nir, L. (2005). Ambivalent social networks and their consequences for participation. *International Journal of Public Opinion Research*, 17(4), 422-442. <https://doi.org/10.1093/ijpor/edh069>

- Offidani, B. (2021). *La disciplina giuridica delle fake news: tra normativa europea ed autoregolamentazione social* (Tesi di Laurea, Luiss Guido Carli).
- Olan, F., Jayawickrama, U., Arakpogun, E. O., Suklan, J., & Liu, S. (2022). Fake news on Social Media: the Impact on Society. Loughborough University. <https://hdl.handle.net/2134/19411862.v1>
- Özdemir, B. P. (2012). Social Media as a tool for online advocacy campaigns: Greenpeace Mediterranean's anti genetically engineered food campaign in Turkey. *Global Media Journal*, 5(2), 23-39.
- Paterson, M. (2013). *Global warming and global politics*. Routledge.
- Pérez-Escoda, A., Pedrero-Esteban, L. M., Rubio-Romero, J., & Jiménez-Narros, C. (2021). Fake news reaching young people on social networks: Distrust challenging media literacy. *Publications*, 9(2), 12-14. <https://doi.org/10.3390/publications9020024>
- Rathore, S., Sharma, P. K., Loia, V., Jeong, Y. S., & Park, J. H. (2017). Social network security: Issues, challenges, threats, and solutions. *Information Sciences*, 421, 43-69. <https://doi.org/10.1016/j.ins.2017.08.063>
- Salvi, S. (2007). Health effects of ambient air pollution in children. *Paediatric Respiratory Reviews*, 8(4), 275-280. <https://doi.org/10.1016/j.prrv.2007.08.008>
- Santerini, M. (Ed.). (2010). *La qualità della scuola interculturale: nuovi modelli per l'integrazione*. Edizioni Erickson.
- Smith, K. P., & Christakis, N. A. (2008). Social networks and health. *Annual Review of Sociology*, 34, 405-429. <https://doi.org/10.1146/annurev.soc.34.040507.134601>
- Spina, G., Bozzola, E., Ferrara, P., Zamperini, N., Marino, F., Caruso, C., Antilici, L., & Villani, A. (2021). Children and Adolescent's perception of media device Use consequences. *International Journal of Environmental Research and Public Health*, 18(6), 5-7. <https://doi.org/10.3390/ijerph18063048>
- Sutton, P. (2004). A perspective on environmental sustainability. *Paper on the Victorian Commissioner for Environmental Sustainability*, 1-32.
- Thunberg, G. (2019). *No one is too small to make a difference*. Penguin.
- Tremblay, R. E. (2010). Developmental origins of disruptive behaviour problems: The "original sin" hypothesis, epigenetics and their consequences for prevention. *Journal of Child Psychology and Psychiatry*, 51(4), 341-367.
- Trevors, J. T. (2010). Human ignorance and education: A significant part of the global pollution crisis. *The Environmentalist*, 30(4), 304-305.
- Triwidyati, E., & Pangastuti, R. L. (2021). Storytelling through the TikTok Application Affects Followers' Behaviour Changes. *Jurnal Ekonomi & Bisnis JAGADITHA*, 8(2), 127-135.
- Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science*, 359(6380), 1146-1151.
- Wallis, C. (2010). *The impacts of media multitasking on children's learning and development: Report from a research seminar*. The Joan Ganz Cooney Center at Sesame Workshop.
- Wheeler, H., & Quinn, C. (2017). Can Facebook aid sustainability? An investigation of empathy expression within the Humans of New York blog. *Sustainability*, 9(6), 7-9.
- World Health Organization. (2016). *INSPIRE: seven strategies for ending violence against children*.

World Health Organization. (2017). *Inheriting a Sustainable World: Atlas on Children's Health and the Environment*.