

“Save the Pacific Northwest tree octopus”: a hoax revisited. Or How vulnerable are school children to fake news?

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Abstract

Purpose – This paper aims to propose a new literacies approach to get insight into young people's capability to detect fake news.

Design/methodology/approach – This study is a replication of a US empirical study in The Netherlands to examine whether schoolchildren were able to identify the spoof website “Save The Pacific Northwest Tree Octopus” as fake.

Findings – In The Netherlands, only 2 out of 27 school children (7 per cent) recognized the website as being a hoax; results that are worse, even, than those of the 2007 US study, where the website was recognized as being unreliable by slightly more than 6 out of 53 school children (11 per cent).

Research limitations/implications – A similar but large-scale quantitative empirical study should be conducted in several countries to see if the trends in the US and The Netherlands are indeed significant.

Practical implications – It is important to start teaching children at an early age how to critically evaluate online information.

Social implications – The perceived reliability of digital information is a hot issue, given the frequency with which fake news is circulated. Being able to critically evaluate digital information will help to have access to trustworthy information.

Originality/value – Instead of using technological fact checking by Google, Facebook and Twitter, this paper suggests the adoption of a new literacies approach, focusing on young people's capability to detect fake news.

Keywords New literacies, Replication study, Fake news, Hoax, Reliable digital information, School children, Tree octopus spoof website

Paper type Research paper

Introduction

If we, as a society, are seeking to achieve equal opportunities for all, accessible information is of prime importance. In that context, [Van den Hoven \(1994, p. 369\)](#), referring to [Rawls \(1993\)](#), goes so far as to refer to information as a “primary good.” As all citizens have an equal right of access to information, [Bovens \(2002\)](#) and [Bovens and Loos \(2002\)](#) have



advocated establishing access to information as a basic right for all citizens, to be upheld in a similar manner as the classic (human) rights (De Jong and Rizvi, 2008). In our digitizing society, fake news threatens the accessibility of information for citizens. New literacies are therefore becoming more and more important. These new literacies consist of the skills, strategies and disposition required to be successful at using and adapting to the changing information and communication technology context that defines our lives today. These new literacies permit us to use the internet to identify questions, locate required information, critically evaluate that information, integrate information from multiple sources and communicate our understanding to others (Leu *et al.*, 2013).

Young people are frequent users of the new media. It is a myth, though, that all young people are skilled in the use of online information (Bennett *et al.*, 2008; Bennett and Maton, 2010; Hargittai, 2010; Helsper and Eynon, 2010). Herold (2012) clearly showed that not only were university students in Hong Kong lacking in digital skills but also were both unable and unwilling to acquire these skills.

The perceived reliability of digital information is important in today's society, and is a hot issue, given how common fake news has become. The question is whether young people, who are not all capable of using digital information, are able to gauge the reliability of digital information. One way to tackle this problem could be to focus on technological innovation. On November 13, 2017, the Dutch Minister of Home Affairs, Kaisa Ollongren, therefore raised the topic in the Dutch Parliament and suggested discussing the problem with media and technology companies.

Meanwhile, Google has already made a start by checking the veracity of the news published on their platform and collaborates with a fact checker such as www.sharethefacts.org/ and initiated the Google News Initiative (<https://newsinitiative.withgoogle.com/dnifund/>). Fact checkers in which Google, Facebook and Twitter are already involved with are: <https://plus.google.com/±DeHoaxWijzer>, www.facebook.com/dehoaxwijzer, https://twitter.com/Hoax_Wijzer; other examples of checkers: www.factcheck.org/, www.politifact.com, www.sharethefacts.org/ and www.snopes.com/.

Though innovative technological detection (by linguistic and network approaches, Conroy *et al.*, 2015) might help to some extent (Chen *et al.*, 2015; Conroy *et al.*, 2015; Rubin *et al.*, 2015; Shu *et al.*, 2017), it can never provide a full solution, as the question as to the criteria used to determine whether, and if so, the degree to which news is fake remains.

It is for this reason that this article suggests to adopt a new literacies approach as a way to fight fake news. To gain insight into how to conduct empirical studies in this field, insights from Leu *et al.* (2007) are used who, in 2007, conducted an empirical study of this kind in the USA. In that study, schoolchildren were asked to gather information and to evaluate the reliability of a spoof website *Save The Pacific Northwest Tree Octopus* (<http://chadoh.github.io/tree-octopus/index.html>). This empirical study has been replicated in a slightly altered form in The Netherlands in 2017.

Replication studies are vital to science. By replicating studies, science and the associated findings become part of a self-correcting system. Recent discussions in psychology have centered on the nature and quality of research (Asendorpf *et al.*, 2013; Pashler and Wagenmakers, 2012), especially regarding the role of replication. A review by Makel *et al.* (2012) found that of the studies appearing since 1900 in the 100 psychology journals with the highest five-year impact factors, only 1.07 per cent were replications. The same study found that over time, the frequency of replications flattened between the 1990s and 2000s but appeared to be on the rise since the 2010s and were expected to continue their rising trend. Given the reality of low replication rates overall, the need to increase replication, as a standard practice of educational researchers, is apparent. If educational research is to

continue as a critical component for developing progressive educational policy, conducting replications is essential (Makel *et al.*, 2012). The particular importance of replication studies that alter aspects of the previous work, but keep the essential elements the same, was highlighted in a review by Kim *et al.* (2017) He suggests that these results provide especially important insights into the phenomenon in question.

In this article, the following research questions are answered:

- RQ1. Do Dutch school children in 2017 perceive the website *Save The Pacific Northwest Tree Octopus* as fake, just as their US counterparts did 10 years ago?
- RQ2. What role can a new literacies approach play in educating citizens, starting at the primary school level, on the use of strategies and dispositions which would enable them to critically evaluate the reliability of digital information to become less vulnerable to fake news?
- RQ3. What lessons can be learned from the results of the empirical studies in the USA and The Netherlands on the spoof website “Save The Pacific Northwest Tree Octopus”?

The paper first presents insights from empirical studies adopting a new literacies approach to illustrate how important it is that citizens are capable of comprehending the texts they come across in our digitized society. Then, the capability of the young to use new media, as learning how to evaluate online news critically cannot start early enough, is addressed, fake news is defined and the vulnerability to fake news is discussed. After having explained the Methods and Material, the comparison of the results of the replicated empirical study conducted in The Netherlands in 2017 with the results of the original empirical study conducted in the USA in 2007 is presented. The paper concludes with lessons on how to deal with fake news and outlines a few implications for future research.

Literature review

New literacies

Ever since the term “new literacies” was first used by Buckingham (1993), it has been associated with many different perspectives (Baker, 2010). Typically, this term suggests that literacy is rapidly changing and transforming as new information and communication technologies emerge, with additional discourses, social practices and skills being required to make use of these technologies (Baker, 2010; Gee, 2008; Lankshear and Knobel, 2011). With the internet, literacy is not just new today; it is new every day, as additional technologies for literacy regularly and rapidly evolve online (Leu, 2000).

Recently, a dual-level theory of new literacies has emerged (Leu *et al.*, 2013). It conceptualizes new literacies on two levels: uppercase (New Literacies) and lowercase (new literacies). The paper uses both levels for the empirical studies.

Lowercase theories explore a specific area of new literacies and/or a new technology, such as the social communicative transactions occurring with text messaging (Lewis and Fabos, 2005). Two empirical studies in this article examine the critical evaluation of online information for reliability. New literacies, as the broader concept, benefits from work taking place in the multiple, lowercase dimensions of new literacies, where rapid changes are more easily studied and identified. When common findings across multiple, lowercase perspectives are integrated into a broader new literacies theory, we have a set of guiding principles that are more stable over time. The greater stability of new literacies theory may provide theoretical direction to inform research into the more rapidly changing contexts at lowercase levels. One of several principles of uppercase new literacies (Leu *et al.*, 2013) is

that critical evaluation is especially important online, a principle that is at the core of the empirical studies in this article.

The new literacies of online research and comprehension seek to describe what happens when we read online to learn. [Leu et al. \(2013\)](#) suggest that at least five processing practices occur during online research and comprehension:

- (1) reading to define important questions ([Taboada and Guthrie, 2006](#));
- (2) reading to locate online information ([Kuiper et al., 2008a, 2008b](#); [Schrader et al., 2008](#));
- (3) reading to critically evaluate online information ([Sanchez et al., 2006](#));
- (4) reading to synthesize online information ([Goldman et al., 2005](#); [Jenkins, 2006](#)); and
- (5) reading and writing to communicate online information ([Greenhow et al., 2009](#)).

These areas are thought to comprise most of the skills, strategies, dispositions and social practices that are distinctive to online research and comprehension in a complex layering of both offline and online reading that we are still seeking to fully understand. This paper uses this lowercase theory of online research and comprehension to inform the operational definition for online reading in the current empirical studies, focusing on online reading to critically evaluate textual and visual information.

Young people's capability to use new media

The widespread idea that all young people are especially tech-savvy and immersed in digital technologies has gained popularity with the use of such terms as “digital natives” ([Prensky, 2001](#)) and millennials (“Net Generation” or “Google Generation” – see [Oblinger and Oblinger, 2005](#)), which seem to imply the existence of an identifiable generation, unlike all other generations, that thinks, behaves and learns differently as a result of continuous exposure to technology. The idea has generated significant criticism in the literature ([Bennett and Maton, 2010](#); [Hargittai, 2010](#)), as it suggests the presence of an apparently insurmountable gap between the younger and the older generations. Moreover, there is little evidence to support this age divide assumption in the use of technology [[Fernández-Ardévol, Ivan, 2015](#) and [Loos \(2012\)](#)]. A solid body of work indicates the complexity of technology patterns of young people, who can hardly be described as a homogeneous group, as well as the importance of going beyond simple dichotomies in understanding their experiences with the new literacies ([Bennett et al., 2008](#); [Bennett and Maton, 2010](#); [Hargittai, 2010](#); [Helsper and Eynon, 2010](#); [Lankshear and Knobel, 2011](#); [Coiro et al., 2014](#)).

The portrait of young people as technologically skilled and naturally inclined to technology use is most probably based on the fact that they have grown up accessing and using new technologies, as most of them have been surrounded by it from birth – an idea reflecting a kind of technological deterministic view of the way young people are expected to use the new media. Nonetheless, with the pervasiveness of information and communication technologies and increased access to new media across all categories of the population, access to technology is not the main factor impacting on the type of technology-based activities engaged in by the young. Empirical studies ([Bennett et al., 2008](#); [Bennett and Maton, 2010](#); [Ólafsson et al., 2014](#); [Vilhelmson et al., 2017](#)) suggest that young people predominantly make use of certain technologies, such as accessing information and communication via social media sites using mobile technologies. By contrast, data from large-scale surveys, including longitudinal studies ([Hasebrink, 2014](#); [Ofcom, 2016](#)), reveal that other technology-based activities, including content creation (text, audio, video and graphics content), are used by a minority of the young people only. Gaming, an activity that

is usually associated with young people, is popular among children and adolescents, but far less so among young people at university or those with jobs (Vilhelmson *et al.*, 2017). In addition, some studies suggest that specialization in technology-based activities occurs at an early age (childhood and adolescence), differentiating subgroups of young people and influencing their technology use in later life (Bennett *et al.*, 2008; Bennett and Maton, 2010). In this regard, among the group of young people, students are most likely to engage in technology-based activities for educational and learning purposes. Hence, empirical studies conducted exclusively on students will not accurately reflect the use of technology in daily life by other groups of young people.

Additionally, the capabilities of young adults to use new media is rather diverse, even when we control for internet access and experience in using different applications (Livingstone and Helsper, 2007; Hargittai, 2010). Socio-economic status, family background and parental education seem to be the key factors explaining the differences in the way young people incorporate technology activities in daily life: those with a higher socio-economic status or from privileged backgrounds tend to use new media not only for communication but also for information and learning and to be involved in a larger number of activities (Livingstone and Helsper, 2007). Hence, a literacy gap emerges, related to the way young people use new media, particularly when the differences between socio-economic backgrounds are considered. Outside the university student population, the gap is more evident (Hargittai, 2010). In addition, some of the empirical studies conducted on young adults also revealed an apparent gender gap in media literacy in the student population (DiMaggio *et al.*, 2004). Young people from privileged backgrounds appear more likely to use internet-based application in a beneficial way, and young women tend to differ from young men in the autonomy of use, experience, new media skills and type of use (Hargittai, 2010).

Even though students are presented as a more or less homogenous group in approaching new communication and information technologies, various empirical studies, such as that conducted by Herold (2012), seem to indicate that they tend to be overconfident about their abilities to make use of Web applications, even though they in fact may lack the basic skills to do so. In addition to expecting young internet users to possess high-level technological skills, there is also a kind of “moral panic” (Cohen, 2002; Goode and Ben-Yehuda, 2010) that dominates the academic discourse (Bennett *et al.*, 2008). It is argued that educators and the education system [largely consisting of people who have “immigrated” to digital and were not born into the new media (Prensky, 2001)] are not able to meet the needs of these new generations of supposedly tech-savvy students who are skilled in the use of communication technologies, dependent on the Web for accessing information and learning tasks, proficient in multitasking and interested in technology use for educational tasks. In reality, there is little empirical evidence to support the idea that the younger generations boast a higher level of technological skills (Kolikant, 2010), and attempts to introduce more technology use within the university setting resulted in educators having to teach their students basic technology skills, in addition to their course subjects (Herold, 2012). A similar situation arose among polytechnic students, as evidenced by Herold’s empirical study:

Some of the students had to be taught basic computing skills, while almost all of the students initially struggled with the computing demands of the courses, despite extensive help. Students were *not* able to acquire the necessary skills by themselves. They were mostly neither willing nor able to become proficient in their use of standard software packages. (2012, p. 8)

Paradoxically, the high levels of access and use of technology among young people did not seem to lead to new literacies. Empirical studies with university students as subjects

(Herold, 2012; Margaryan *et al.*, 2011) have shown that this group is less interested in acquiring knowledge about the tools they use and more interested in the outputs – how they can collate information and re-arrange it in educational outputs. Also, the increase in availability of information, with the use of the new media, did not seem to generate a more critical view in the way the students approach information sources: not only do they often rely on single-source information but also their ability to critically evaluate sources and to use contradictory information to produce their own arguments were found to be weak (Jones *et al.*, 2010). Not only does the level of media literacy competencies among university students tend to be overestimated but also the subjects of these studies exhibit a lack of critical awareness in the evaluation of online sources: in short, an inability to evaluate different sources from the media and the misuse of the new media content was seen, with these students treating all as objective, non-biased content with little concern about the reliability of the sources. “Except for a very few students, they treated the information provided by academic articles, research reports, political manifestoes, advertising statements, etc. as sources of equal reliability” (Jones *et al.*, 2010, p. 13).

A recent study (Ofcom, 2016) conducted in the UK showed that the percentage of young people (16-24 and 25-34 years of age) using different search engines, who understand that the accuracy of the information garnered from websites is variable, is between 60 and 65 per cent. This is no different from other age groups (e.g. 35-55 years). Similarly, no significant differences were found between the percentage of young and old adults users who recognize that certain Google results are nothing but advertisements.

There are indications that some progress has been achieved over the past few years in the way young people perceive social media content. A study conducted by Ofcom (2016) in the UK suggests that a shift toward more precautionary attitudes has taken place across all age groups, between 2014 and 2016. Also, Van Kruistum (2013), who has studied the use of new media by adolescents in The Netherlands (secondary school students of 14-16 years of age), found an increased number of participants who distrusted internet as a source of information and preferred text books or television as more reliable sources: “they found new media easy, fun and interesting but not suitable for serious work” (p. 112). Van Kruistum (2013) states that such findings could be explained by the socialization into school values and internalization of the distinction between academic and non-academic sources, but we cannot ignore the fact that the fake news discussion has taken over the public discourse in the past few years, thus possibly also influencing the degree of trust in new media.

A report released in 2016 by Stanford History Education Group (SHEG) explored students' capability to reason about information found on the internet, and particularly on social media sites. This empirical study started from the assumption that a student with a certain level of digital literacy would be able to distinguish between reliable and unreliable information, would navigate through mixed sources and find accurate information. Instead, the study found that many students were not aware of the conventions indicating whether the information has been verified and showed little skepticism when evaluating the content of particular websites. Also, students proved to be more focused on the media content than on the sources and the trustworthiness of the sources. This empirical study actually proves the inability of university students to judge the credibility of different information found in the social media. The researchers from SHEG drew attention to the importance of modifying university curricula to improve students' new literacies, especially concerning their abilities to distinguish between reliable and unreliable information. They also showed students' vulnerability to fake or untruthful information and their inability to discern alternate “truths” and to base their opinions/decisions on reliable sources of information. With students having such limited new literacies capabilities, the importance of educating

younger children on how to critically evaluate online information cannot be overestimated. Before presenting the empirical studies conducted in the USA in 2007 and in The Netherlands in 2017, which examined the extent to which young school children are capable of critically evaluating online information, the paper therefore first turns our attention to the problem of vulnerability to fake news and what do about it.

Vulnerability to fake news

Before going more into detail about the problem of vulnerability to fake news and what to do about it, it is important to define this phenomenon that has such an impact on our society. Generally speaking, fake news can be defined as “news stories that have no factual basis but are presented as news” (Allcott and Gentzkow, 2017, p. 5). More specifically, fake news is seen as fabricated news, “manipulated to look like credible journalistic reports that are designed to deceive us” (Brennen, 2017, p. 180). Social media amplify the effect of fake news once it goes viral (for example, with the use of social media sites). Indeed, fake news has the potential to spread false beliefs and create mass delusions. See Tandoc *et al.* (2017) for a typology of scholarly definitions of fake news and Wardle (2017) for a critical discussion of the phenomenon.

Leaving political propaganda aside, the core aspect of fake news is the fact that it is presented and perceived as realistic, even though it is no such thing. Furthermore, if information is perceived as being true, this creates a strong persuasive effect (Balmas, 2014). The vulnerability of young people to fake news is related to the capabilities of using social media and their critical skills in evaluating both the media content and the sources. The studies discussed clearly show that this is a weak spot. Moreover, Livingstone *et al.* (2015) demonstrate that the media literacy of children in the EU did not improve in the period from 2010 to 2014, which leads to important questions about young people’s vulnerability to fabricated information distributed through online sites.

We are all exposed to fake news; the risk is believing what we see on Facebook, Twitter and other social sites. It is not only that we are ill-equipped to recognize fake news but also we tend to trust what we read because it suits our expectations, preferences and values. Many search engines tailor their results to individual preferences, which means that we do not randomly receive news: the results received fit our own opinions, intentions or the questions we searched for (Loertscher, 2017). Fake news has always been present in the media, but the phenomenon has only recently started to be analyzed. A central topic in public discourse today, it is now considered a propaganda weapon (Vargo *et al.*, 2017). The idea of fabricated news, whether politically or financially motivated (Dewey, 2016), challenges the ethical principle of journalism and threatens democratic life (Brennen, 2017; Tandoc *et al.*, 2017; Wardle and Derakhshan, 2017).

We tend to believe that education helps to prevent us from falling victim to fake news by broadening our perspective and our ability to distinguish between fact and fiction (Allcott and Gentzkow, 2017). Education gives people better opportunities to counter-argue information which is incongruent with what they think and reinforce familiar arguments (Flynn *et al.*, 2017). Familiarity due to prior exposure is a cognitive mechanism emerging from experimental studies (Pennycook *et al.*, 2017) that could explain why people tend to believe information that is demonstrably untrue. The so-called “illusory truth effect” operates in this case: statements that are familiar, containing information to which we have been exposed to before, are easier to process as they are more fluently understood and hence are more likely to be evaluated as accurate. Consequently, most fake news is easily distributed on social media platforms (Shu *et al.*, 2017), as new media and social sites are becoming preferred sources of information for the majority of the population and have an

exponential increase in the familiarity of use (Gottfried and Shearer, 2016). The issue becomes even more urgent in the case of young adults, who are keen users of social media sites and incorporate new media in their daily routine. Adolescents, for example, get much of the news from their friends and families, and social network sites have a key role in connecting them to the current events (Marchi, 2012; Livingstone *et al.*, 2014). While social network sites are intuitively felt to be the main purveyors of fake news, which, if true, would make young people more vulnerable than other age groups, various studies using network analysis (see, for example, Albright, 2017) have shown that more fake news hyperlinks originate from the mainstream media and Wikipedia.

A well-known research project – *EU kids online* – aiming to investigate internet behavior and skills of the young in a pan-European context (Sonck *et al.*, 2011; Livingstone *et al.*, 2014) found that approximately 38 per cent of the respondents between 9 and 12 years of age and 60 per cent of cent of the respondents between 13 and 16 years of age “read/watch the news on the internet.” Also, approximately half of the respondents between the ages of 9 and 12 and 65 per cent of cent of the respondents between 13 and 16 years of age reported comparing websites to decide whether the information was true. In the USA, 62 per cent of adults get their news from social media (Gottfried and Shearer, 2016) and about one-third say that they trust the information they get from social media “some” or “a lot.” Furthermore, in a study on internet users in the UK (Ofcom, 2016), approximately half of the respondents (47 per cent of cent of the respondents between 16 and 24 years of age) admitted making a “formal” judgement before exploring the detail of the content they have read. This is probably due to the fact that the degree of engagement with the news on social media sites for the most part consists of reading the story headlines (Gabelkov *et al.*, 2016). Yet, adolescents preferred opinions on current events from social websites (Facebook proved to be the most popular social website among the young – according to data from EU kids online) because they are more entertaining and offer extensive discussions on events and their consequences (Livingstone *et al.*, 2014). For more information about the results of the EU kids online project, see Holloway *et al.* (2013), Ólafsson *et al.* (2014) and Livingstone *et al.* (2015).

Perceived reliability of digital information

Hertz (2014) offers useful insights on how to screen the reliability of websites:

If you're not sure that what you've found online is to be trusted, do some digging. (. . .) Try to establish who your source actually is. (. . .) Determine whether your source is sharing opinion or fact. (. . .) If a claim sounds extreme, look into it especially carefully. (. . .) Ask yourself whether you source says fits that you already know. (. . .) If the subject is new to you, is there anyone who can help you evaluate these claims? (. . .) Scan the landscape, and determine whether others are making the same claims. (pp. 177-178)

Mediawijzer (www.mediawijzer.net/about-mediawijzer-net/), *Nationaal Media Paspoort* (www.nationaalmediapaspoort.nl) and *MediaMasters* (www.mediamasters.nl) in The Netherlands and *AllSides* (www.allsides.com/schools) in the USA are examples of such initiatives.

These educational programs adopt a general approach to enhance the capability to critically evaluate the reliability of digital information by using a new literacies approach. The disinformation generator developed by Ruurd Oosterwoud focuses on fake news, allowing users to create fake news themselves to make them aware of how this works and what its dangers are (www.slechtnieuws.nl/#intro, www.nd.nl/nieuws/media/zelf-nepnieuws-leren-maken-met-nieuwe-game.2842540.lynkx).

As it is beyond the scope of this article to discuss in detail the perceived reliability of digital information, the paper refers to [Flanagin and Metzger \(2000, 2007\)](#); [Metzger et al. \(2003, 2010\)](#) and [Metzger and Flanagin, 2013](#)) for studies on credibility evaluation online; to [Bråten et al. \(2009\)](#) for an empirical study on students' source evaluation; and to [Hargittai et al. \(2010\)](#) for a study on young adults' critical assessment of web content.

In the next section, the way Dutch children in 2017 dealt with information presented at a spoof site, compared to their counterparts in the USA about 10 years ago, is explored.

Material and methods

[Leu et al. \(2007\)](#) conducted an empirical study on 13-year-old US school children's ability to critically evaluate online information for reliability. The sample included the top quartile of school children ($n = 53$) in samples from the states of Connecticut and South Carolina. Each student was exposed to the spoof site *Save The Northwest Pacific Tree Octopus* (<http://zapatopi.net/treeoctopus/>), a site devoted to this rare species of octopus, complete with pictures of the animal itself and its environment:

The problem is clearly explained:

Although the tree octopus is not officially listed on the Endangered Species List, we feel that it should be added since its numbers are at a critically low level for its breeding needs.

The website also gives historical background information, such as:

The history of the tree octopus trade is a sad one. Their voracious appetite for bird plumes having exhausted all the worthy species of that family, the fashionistas moved on to cephalopod accoutrements during the early 20th Century. Tree octopuses became prized by the fashion industry as ornamental decorations for hats, leading greedy trappers to wipe out whole populations to feed the vanity of the fashionable rich. While fortunately this practice has been outlawed, its effects still reverberate today as these millinery deprivations brought tree octopus numbers below the critical point where even minor environmental.

The website also includes links which can be clicked on for more specific information. At the bottom of the website is a reference to the Kelvinic University branch of the Wild Haggis Conservation Society.

In the original US study, school children received a short, fictitious message from another class, asking them to locate and evaluate the reliability of a spoof website, *Save The Northwest Pacific Tree Octopus* (<http://zapatopi.net/treeoctopus/>). They were to provide three reasons for their answer and summarize the most important information from that site in one or two sentences. They were then asked to send their information via IM, email or to post this on a blog site. Following the activity, students were interviewed to ensure that they were familiar with the term "reliable," an important concept in the task. When asked what this term meant, all responded with answers indicating that they understood the term (e.g. "it means that you can trust it," "it means it will always be there for you" or "it's like a friend that you can trust").

Results

Since the original empirical study in the USA took place, about 10 years have passed. Fortunately, the spoof website *Save The Pacific Northwest Tree Octopus* is still online, which allowed us to use it to conduct this empirical study in another country: The Netherlands. In Spring 2017, the Dutch author of this article was introduced by the teacher to school class of 27 Dutch children (13 girls and 14 boys, 11/12 years old). The teacher and the schoolchildren were told that the lesson that would follow would be an online reading comprehension

exercise; the real purpose of the lesson was not revealed in advance. The children were asked to visit the abovementioned website (<http://zapatopi.net/treeoctopus/>). They were given the following instructions:

Have a look at this website. Look at the pictures, click on the links if you wish. Do not hurry, you have time enough. And this is not a test. It will not be graded.

The website was automatically translated to Dutch, a facility offered by the chrome notebook they all used. Then, they were asked to answer the following questions:

- Q1. This website presents an octopus living in trees. What country does this animal live in?
- Q2. According to the website, this particular octopus is an endangered species. For what reason?
- Q3. If Greenpeace were to ask you to save this octopus, would you support this and sign? YES, because[. . .]NO, because[. . .](choose one).
- Q4. Were there parts of the website you did not understand? If so, please explain.
- Q5. Are here any other comments about this website you would like to make?

Hence, these pupils thought that the text was about their willingness to undertake action for an endangered animal. The pupils who answered “YES” to Q3 were judged as perceiving the site as a reliable one. In this way, it was not necessary to explicitly ask about the reliability of the site, which would have risked priming them. The schoolchildren were debriefed after the session and they received a new media literacies training.

The 2007 empirical study conducted in the USA by *Leu et al. (2007)* found that slightly more than half (27) of the 53 schoolchildren taking part in the study reported the website as being very reliable. Only 6 out of the 53 schoolchildren (11 per cent) viewed the website as unreliable. Each of these six pupils had just participated in a lesson that used this website to teach students to be suspicious of information online. In The Netherlands, only 2 out of 27 schoolchildren (7 per cent) recognized that the website was a hoax. On the one hand, the setting of the task (school environment), the trust in their teacher and the emotional involvement (the topic was an animal in danger) made it more difficult for them to perceive the information on the website as fake. Several respondents told me that they were shocked that they had considered the digital information on the website to be reliable, as they had received several new literacies training at school over the past year. One of the two children who concluded the digital information was fake did so because, as she said, “I don’t think that this animal exists because an octopus doesn’t live in trees! I think it’s fake because such animals live in the sea, don’t they?,” and the other girl said, “It’s fake. I couldn’t find any information about this animal online, but I found a site” (www.scientias.nl/kinderen-geloven-wat-op-internet-staat/) [transl. title link Dutch site: children believe what’s on the internet].

Conclusion: how to deal with fake news

In this last section, the paper comes back to the research questions and outlines a few implications for future research:

- Do Dutch school children in 2017 perceive the website “Save The Pacific Northwest Tree Octopus” as being fake, just as their counterparts in the USA did 10 years ago? In The Netherlands, only 2 out of 27 schoolchildren (7 per cent) perceived that the

website was a hoax, which is even worse than the results of the 2007 US study, where slightly more than 6 out of 53 schoolchildren (11 per cent) reported that the website was unreliable.

- What role can a new literacies approach play in educating citizens, starting at the primary school level, on the use of strategies and dispositions which would enable them to critically evaluate the reliability of digital information to become less vulnerable to fake news?
- As even college-age students have limited new literacies capabilities, it is important to start early and to educate young children on how to critically evaluate online information.
- What lessons can be learned from the results of the empirical studies in the USA and The Netherlands on the spoof website “Save The Pacific Northwest Tree Octopus”? As only a limited number of children in two countries were involved in these empirical studies, a similar but large-scale quantitative empirical study should be conducted in several countries to see if the trends in the USA and The Netherlands described in this article are indeed significant.

It is recommended to conduct a similar large-scale quantitative empirical study of this kind in several European countries, which will also involve older people, the age group that, according to authors such as Prensky (2001), can be characterized as consisting of digital immigrants who are supposedly less new media savvy than their younger counterparts, the so-called digital natives. This will enable us to determine just how media-savvy citizens from different generations are – or are not – and what we can do to help them reduce their risk of becoming victims of fake news.

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