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# Effectiveness Of Educational Approaches To Elementary School Pupils (11 Or 12 Years Old) To Combat Fake News

## **ABSTRACT**

The purpose of this literature study is to obtain information about educational approaches to teaching 11 to 12 years old children focusing on how to distinguish between real news and fake news. With this purpose we studied 16 academic papers about learning activities to make primary school children media-literate and able to recognise fake news. What we found is that having children create their own news messages seems to be the most effective approach. News messages that they create can be text messages as well as videos, audios, pictures and animations. Based on this conclusion, students from The Hague University of Applied Sciences Teacher Training Institute (PABO) have been asked to develop a set of learning materials that can be used for instruction in primary schools. The effectiveness of those materials is currently being tested at an elementary school in Rijswijk. The results of the literature and the field study will be shared in the Dutch centre of expertise for media literacy education, Mediawijzer.net.

## **KEY WORDS**

Media education. News literacy. Primary education. Literature review.

# 1. Introduction

As in other European countries, primary education in the Netherlands has a demand for instructional materials that teach 10 to 12 years old children how to distinguish fake news from real news.<sup>1,2</sup> Teaching pupils how to develop a critical attitude towards news messages on the internet and social media is important at this young age because most children already use mobile telephones with access to the internet and social media<sup>3</sup> and because teaching of media literacy skills is most effective at this age.<sup>4</sup> The ability to identify false messages is even more important for young people because they are relatively inexperienced in life.<sup>5</sup>

The spread of fake news is considered a threat for democracy and civic participation in a lot of European countries. Although the Netherlands is assumed to be one of the most 'fake news-resistant' countries in Europe,<sup>6,7</sup> the Dutch government still holds the opinion that it should take measures against it to warrant societal stability. Fake news is not a new phenomenon but the rapid spread of false information through the internet and social media worsens the problem, especially because social media are the main sources of news messages for young people.<sup>8</sup>

## Measures to combat fake news

The literature on the combat of information disorder (for instance<sup>9,10</sup>) distinguishes at least four types of measures: technological approaches, stronger journalism, regulation by the government and educational programs. Technological approaches imply, for instance, the automated identification and blocking of spoof sites and advertisements that obviously contain nonsense or illegal information (clickbait).<sup>11</sup> One of the problems with these types of measures is that the creators of information disorders will always find ways to avoid those algorithms, thereby creating an „arms race“ between content creators and technological platforms.<sup>12</sup>

Factchecking by neutral third parties is an example of strengthening journalism practices. It is sometimes practised in cooperation with technological partners. Facebook, for instance, cooperates in the discovery and flagging of fake news with fact-checking organisations

<sup>1</sup> NATIONAL LITERACY TRUST: *NewsWise: Pilot Report*. London : National Literacy Trust, 2018. [online]. [2020-10-05]. Available at: <<https://files.eric.ed.gov/fulltext/ED588802.pdf>>.

<sup>2</sup> WALRAVEN, A., PAAS, T., SCHOUWENAARS, I.: *Mediawijsheid in het Primair Onderwijs: Achtergronden en Percepties*. Hilversum; Nijmegen : Mediawijzer.net; ITS, Radboud Universiteit, 2013, p. 21.

<sup>3</sup> KENNISNET : *Monitor Jeugd en Media 2017*. [online]. [2020-10-06]. Available at: <[https://www.kennisnet.nl/app/uploads/kennisnet/publicatie/jeugd\\_media/Kennisnet\\_Monitor\\_Jeugd\\_en\\_Media\\_2017.pdf](https://www.kennisnet.nl/app/uploads/kennisnet/publicatie/jeugd_media/Kennisnet_Monitor_Jeugd_en_Media_2017.pdf)>.

<sup>4</sup> TAKAHASHI, A.: Education's Role in Solving the Contemporary „Fake News“ Problem. In VANDERHEYDEN, M. (ed.): *The New State of the News: Confronting Misinformation in the Digital Age*. Washington : University of Washington, 2018, p. 57.

<sup>5</sup> BALČYTENĖ, A., WADBRING, I.: News Literacy: Reinventing the Ideals of Journalism and Citizenry in the 21st Century. In WADBRING, I., PEKKALA, L. (eds.): *Citizens in a Mediated World: A Nordic-Baltic Perspective on Media and Information Literacy*. Göteborg : Nordicom, 2017, p. 40.

<sup>6</sup> HOSSOVÁ, M.: Fake News and Disinformation: Phenomenons of Post-Factual Society. In *Media Literacy and Academic Research*, 2018, Vol. 1, No. 2, p. 31.

<sup>7</sup> LAUF, E., SIERHUIS, R., WEGGEMANS, V.: *Mediamonitor 2018*. [online]. [2020-10-06]. Available at: <<https://www.mediamonitor.nl/wp-content/uploads/Mediamonitor-2018-Reuters-Institute-Digital-News-Report-Nederland-2018.pdf>>.

<sup>8</sup> LOOS, E., IVAN, L., LEU, D.: „Save the Pacific Northwest Tree Octopus“: A Hoax Revisited. Or: How Vulnerable Are School Children to Fake News? In *Information and Learning Science*, 2018, Vol. 119, No. 9, p. 521.

<sup>9</sup> WARDLE, C., DERAKHSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09), p. 57-74.

<sup>10</sup> MARDIA, V., MILAN, S.: *Wisdom of the Crowd: Multistakeholder Perspectives on the Fake News Debate*. Philadelphia, PA : Internet Policy Observatory, Annenberg School of Communication, University of Pennsylvania, 2018, p. 1, 10-14.

<sup>11</sup> WARDLE, C., DERAKHSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09), p. 58-59.

<sup>12</sup> O'CONNOR, C., WEATHERALL, J. O.: *Misinformation Age: How False Beliefs Spread*. New Haven; London : Yale University Press, 2019, p. 175.

in different countries, although it makes an exception for utterances by politicians, which are not fact-checked. Since June 2020, Facebook offers an opportunity to turn off political ads.<sup>13</sup> Fact-checking organisations are supposed to bring extra accuracy to the public debate<sup>14</sup>, but it is also believed that arguments based on facts will not convince people if that information is contrary to a person's world view.<sup>15</sup>

One of the main objections to technological solutions to combat false information is that they restrict freedom of speech. This is, of course, true for all regulative measures by governments. Marda and Milan discuss, amongst other topics, the German Network Enforcement Act, which „promises to fine social media companies that fail to take down from their platforms hate speech or fake news within 24 hours.“<sup>16</sup> It is not surprising that this has caused objections by many human rights organisations in Germany as well as worldwide, which hold the opinion that the law threatens freedom of speech.

All described disadvantages of technological and regulative solutions to combat fake news and other types of information disorder lead to the broadly accepted conclusion that false information is best opposed by educational programs.<sup>17,18,19,20</sup> Making young children critical thinkers is a particularly long term solution to combat fake news and is therefore encouraged by many experts.<sup>21</sup> This is also the view of the Dutch government.<sup>22</sup> In this paper we will therefore focus on educational approaches aiming to develop children's ability to handle disinformation.

## Types of information disorder

There are various words for what can be considered 'undesired information': fake or false news, misinformation, disinformation, information disorder, hate speech, and so forth. Information disorder is the most general term for all of these types of content. In this research we follow largely the Wardle and Derakshan's distinction of three types of information disorder:<sup>23</sup>

- Misinformation is information that is false but is not created with false intentions. It is often found in publications that can be characterised as bad journalism.
- Disinformation is information that is false *and* created to deliberately harm a person, social group, organisation or country. In our view, disinformation includes false content that is

<sup>13</sup> RODRIGUEZ, S.: *Mark Zuckerberg Says Facebook Will Allow Users to Turn Off Political Ads*. [online]. [2020-06-17]. Available at: <<https://www.cnn.com/amp/2020/06/17/facebook-will-allow-users-to-turn-off-political-ads-mark-zuckerberg.html>>.

<sup>14</sup> KANIŽAJ, I., LECHPAMMER, S.: The Role of Organisations of Journalists in Promoting Media Literacy: Building Credibility and Trust. In *Media Literacy and Academic Research*, 2019, Vol. 2, No. 1, p. 30.

<sup>15</sup> COOK, J., LEWANDOWSKY, S., ECKER, U.: Neutralizing Misinformation through Inoculation: Exposing Misleading Argumentation Techniques Reduces their Influence. In *PloS One*, 2017, Vol. 12, No. 5, p. 3.

<sup>16</sup> MARDA, V., MILAN, S.: *Wisdom of the Crowd: Multistakeholder Perspectives on the Fake News Debate*. Philadelphia, PA : Internet Policy Observatory, Annenberg School of Communication, University of Pennsylvania, 2018, p. 1.

<sup>17</sup> WARDLE, C., DERA KHSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09), p. 68-70.

<sup>18</sup> MARDA, V., MILAN, S.: *Wisdom of the Crowd: Multistakeholder Perspectives on the Fake News Debate*. Philadelphia, PA : Internet Policy Observatory, Annenberg School of Communication, University of Pennsylvania, 2018, p.16.

<sup>19</sup> STANFORD HISTORY EDUCATION GROUP: *Evaluating Information: The Cornerstone of Civic Online Reasoning: Executive Summary*. Stanford (CA) : Stanford History Education Group, 2016, p. 4-7.

<sup>20</sup> SCHMITT, J. B. et al.: Critical Media Literacy and Islamist Online Propaganda: The Feasibility, Applicability and Impact of Three Learning Arrangements. In *International Journal of Conflict and Violence*, 2018, Vol. 12, No. 1, p. 4.

<sup>21</sup> MARDA, V., MILAN, S.: *Wisdom of the Crowd: Multistakeholder Perspectives on the Fake News Debate*. Philadelphia, PA : Internet Policy Observatory, Annenberg School of Communication, University of Pennsylvania, 2018, p.12.

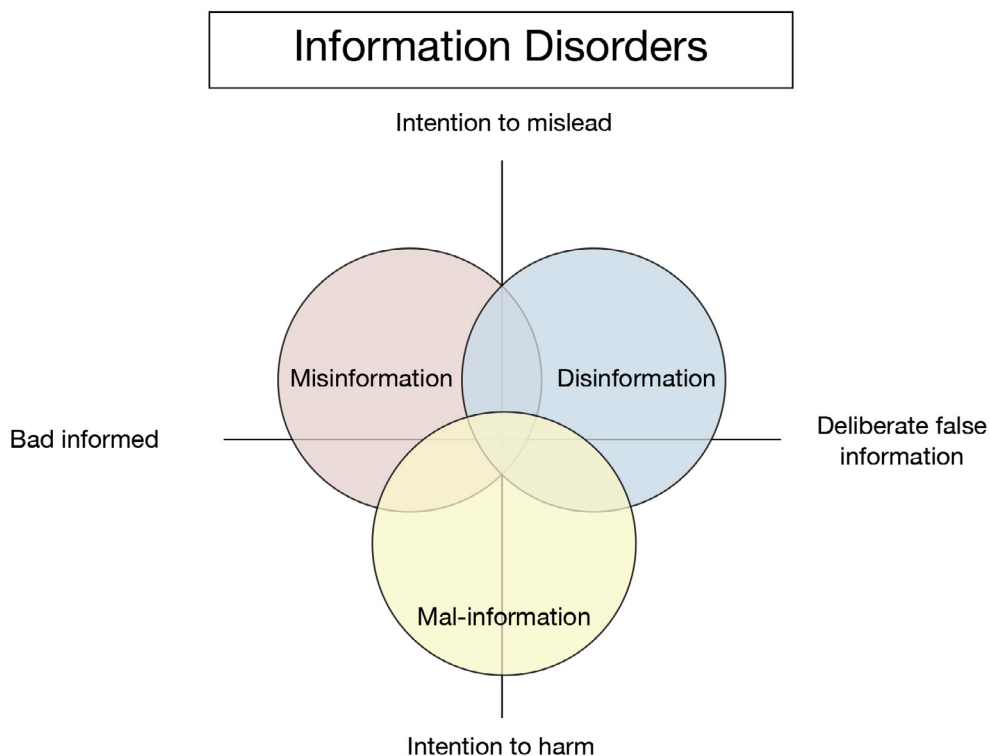
<sup>22</sup> RIJKSOVERHEID, N. L.: *Desinformatie en Nepnieuws*. [online]. [2020-05-10]. Available at: <<https://www.rijksoverheid.nl/onderwerpen/desinformatie-nepnieuws>>.

<sup>23</sup> WARDLE, C., DERA KHSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09), p. 20-22.

created with the intention to generate clicks on paid content on internet websites (clickbait) or simply to attract attention. The difference from misinformation is that disinformation is consciously created with the intention to mislead people.

- Mal-information is information that is based on reality but is used to inflict harm on a person, organisation or country. Examples of mal-information are hate speech, leaks and harassment.

These different types of information disorders can be plotted in a matrix with four quadrants in which the x-axis expresses the question as to whether false information is deliberately false (the information producer is a liar) or not (the information producer is poorly informed himself/herself). The y-axis presents the intention to mislead on the one side and the intention to harm on the other side. The three types of information disorders identified by Wardle and Derakshan are presented in the matrix in Figure 1.



**FIGURE 1:** The three types of information disorders (Wardle and Derakshan 2017) presented in a matrix with two axes

Source: own processing

In our research on educational materials for primary school children, we will use the definition of 'fake news' by Myhre,<sup>24</sup> which means that we will focus on information that is 'not reliable'. We will focus on 'real fake news' (disinformation), but sources with untrustworthy content (misinformation) are also part of our research. Types of mal-information are not included in our research, although the spread of mal-information is a serious problem in groups of young adolescents.

<sup>24</sup> MYHRE, E.: *Supranational or Compartmental: Applying the Question of European Union Identity to the Topic of Disinformation*. Harrisonburg, VA : James Madison University, 2019, p. 3.

## Content types

Fake news has various content types. A content analysis of fake messages discovered by the Turkish factchecking organization Teyit.org resulted in the conclusion that most fake news consist of videos and photographs.<sup>25</sup> A relatively recent development is the rise of ‘deepfakes’, that is, videos that are created with artificial intelligence that can hardly be identified as ‘fake’.<sup>26</sup> Due to the popularity of images amongst young adolescents, this observation is very important for our own research on educational materials to combat fake news.

A third distinction that can be made is that of different types of genres. Tandoc, Lim and Ling<sup>27</sup> discern political fake news (propaganda) from other genres such as photo manipulation, fabricated news articles, advertisements and satire and parody news. The latter categories can be considered as examples of disinformation whose purpose is to entertain or attract attention.

## Research questions

The main question that will be answered in this literature study is: what are the most promising learning activities to make 11 and 12 years old pupils skilled in distinguishing real news from fake news?

The sub-questions are:

- RQ1 What types of educational approaches can be used to make children resistant to fake information?
- RQ2 What does the literature reveal about the effectiveness of those approaches?

## 2. Procedure

Keywords that we used to find relevant information in Google Scholar are reported in table 1.

Major subject	Modifier	Sphere
„news literacy“	effectiveness	(„primary education“
OR		OR
(„media education“ AND „fake news“)		„elementary education“)
		NOT „higher education“

**TABLE 1:** Keywords to find relevant information

Source: own processing

Papers that were found with these search terms were rated on relevance for answering the research questions based on the abstracts and quick searches with Ctrl-F. References listed in those papers were checked for relevance in the same way (backward chaining). The time filter was set on 2010-2019.

Using this search strategy we found 16 relevant papers. Those papers were read in detail and relevant paragraphs were coded with the qualitative research tool Atlas.ti. The reports from Atlas.ti were used to answer the research questions.

<sup>25</sup> ÜNAL, R., ÇIÇEKLIOĞLU, A.: The Function and Importance of Fact-Checking Organizations in the Era of Fake News: Teyit.org, an Example from Turkey. In *Media Studies*, 2019, Vol. 10, No. 19, p. 156.

<sup>26</sup> KNIGHT, E., MOHAMMADI, R., LE BOMIN, L.: *Game of Fakes: An Entertaining Approach to Analyzing How Awareness of Fake News Affects Trust in News Media*. [online]. [2018-10-20]. Available at: <<https://mastersofmedia.hum.uva.nl/blog/2018/10/20/game-of-fakes/>>.

<sup>27</sup> TANDOC, E., LIM, Z. W., LING, R.: Defining „Fake News“. In *Digital Journalism*, 2018, Vol. 6, No. 2, p. 141-147.



### 3. Results

*RQ1 What types of educational approaches can be used to make children resistant to fake information?*

One of the fundamental distinctions in approaches to counter fake news is the difference between debunking and prebunking.<sup>28</sup> Debunking means that false information is corrected by providing counterarguments, alternative facts and so forth. The educational actions consist in those cases of 'interventions' at the moment that pupils meet fake information.<sup>29</sup> Prebunking means that people are pre-emptively confronted with fake news to make them resistant at the moment that they will meet fake information in reality. The prebunking approach parallels the metaphor of the inoculation theory that implies that people become resistant to fake news if they are exposed to a softer version of fake information beforehand. „Just as vaccines generate antibodies to resist future viruses, inoculation messages equip people with counterarguments that potentially convey resistance to future misinformation, even if the misinformation is congruent with pre-existing attitudes.“<sup>30</sup>

The inoculation approach itself can be applied passively (by reading and recognition) or more actively (by experience and generating one's own pro- and counterarguments). Roozenbeek and Van der Linden<sup>31</sup> hold the opinion that active inoculation is more effective because it implies a more involved cognitive process. They developed a game ('Bad News') in which participants from different age groups and different educational backgrounds created their own fake news using six different strategies: impersonation, emotion, polarisation, conspiracy, discredit and trolling. The conclusion of their research was that all types of participants had improved their „ability to spot and resist misinformation“ after playing the game.<sup>32</sup>

Other types of active inoculation that are mentioned in the literature entail children creating their own news items,<sup>33,34,35</sup> reflection assignments<sup>36,37</sup> and discussions in peer groups.<sup>37</sup> Another example of active construction of knowledge about misinformation is fact-checking by student groups at universities (for instance, Nieuwscheckers at Leiden University in the Netherlands). Although fact-checking itself and the output of fact-checking centres are typically the examples of debunking fake news,<sup>38</sup> it can be maintained that fact-checking activities by students generate learning processes for themselves that are typically associated with prebunking approaches.

<sup>28</sup> ROOZENBEEK, J., VAN DER LINDEN, S.: Fake News Game Confers Psychological Resistance Against Online Misinformation. In *Palgrave Communications*, 2019, Vol. 5, No. 65, p. 2.

<sup>29</sup> STAUSS, C.: *Critical Constraints in the Classroom: Assessing How Teachers Approach Media Literacy in Middle and Secondary Schools*. [Master Thesis]. Oregon : University of Oregon, 2012, p. 40.

<sup>30</sup> COOK, J., LEWANDOWSKY, S., ECKER, U.: Neutralizing Misinformation through Inoculation: Exposing Misleading Argumentation Techniques Reduces their Influence. In *PloS One*, 2017, Vol. 12, No. 5, p. 4.

<sup>31</sup> ROOZENBEEK, J., VAN DER LINDEN, S.: Fake News Game Confers Psychological Resistance Against Online Misinformation. In *Palgrave Communications*, 2019, Vol. 5, No. 65, p. 2-3.

<sup>32</sup> Ibid., p. 1.

<sup>33</sup> WALRAVEN, A., PAAS, T., SCHOUWENAARS, I.: *Mediawijsheid in het Primair Onderwijs: Achtergronden en Percepties*. Hilversum; Nijmegen : Mediawijzer.net; ITS, Radboud Universiteit, 2013, p. 17.

<sup>34</sup> ZEZULKOVA, M.: *Whole Person Hermeneutic Media Learning in the Primary Classroom: An Intercultural Grounded Philosophy* [Doctoral Dissertation]. Bournemouth, Dorset, England : Bournemouth University, 2015, p. 17.

<sup>35</sup> KLEEMANS, M., EGGINK, G.: Understanding News: The Impact of Media Literacy Education on Teenagers' News Literacy. In *Journalism Education*, 2016, Vol. 5, No. 1, p. 75.

<sup>36</sup> WARDLE, C., DERAOKSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09), p. 69.

<sup>37</sup> SCHMITT, J. B. et al.: Critical Media Literacy and Islamist Online Propaganda: The Feasibility, Applicability and Impact of Three Learning Arrangements. In *International Journal of Conflict and Violence*, 2018, Vol. 12, No. 1, p. 6.

<sup>38</sup> WARDLE, C., DERAOKSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09), p. 6.

A more passive prebunking approach that is, nevertheless, often mentioned as a promising method to make children resistant to false information is the analysis and evaluation of existing cases with news stories.<sup>39,40,41</sup> Katsaounidou a.o. mentions the online game Factitious, „in which the players should read the containing articles, swipe to the right if they think that it is a real story, and swipe left if they think that it is a fake story.“<sup>42</sup>

As a last remark it is to be pointed out that fake news or media literacy should preferably not be instructed at school as a subject in itself. Media literacy skills and knowledge are related to other subjects.<sup>43</sup> The ability to critically examine news, photographs and videos is typically a competency that can be indicated as a 21<sup>st</sup> century skill. Experts on educational science indicate that such broad skills are best integrated in other subject fields that are taught at school, like history, geography or social studies (see for instance<sup>44</sup>).

## RQ2 What does the literature reveal about the effectiveness of those approaches?

Hardly any information was found on the effectiveness of instructions on fake news. Existing studies on effectiveness mostly investigate games as a learning tool.<sup>45,46</sup> The results of these studies suggest that there is a positive correlation between playing fake news games and participants' abilities to resist fake news. These positive results, however, do not prove that playing games is the *most* effective approach to make young people resistant to fake news. However, because of their experimental setting, these games give the opportunity to investigate the effects of the inoculation with fake news in a quantitative way.

Research on prebunking and fake news games shows that creating your own news is a promising approach to make people news-literate. This might be executed in a game but also in a 'newsroom' or a lab at school.<sup>47,48,49</sup> News messages should not be restricted to texts. On the contrary, young children are intrinsically motivated to make pictures, videos or podcasts rather than to write texts.

From an educational science point of view, it is important to emphasise that a detailed description of learning outcomes is required if we want to assess the effectiveness of learning materials.<sup>50</sup> In the current research project, the desired learning outcome will be the *recognition* of real and fake news, even if the children's learning activities are more focused upon creating their own news. A set of true/false questions like the online quiz Factitious seems to be an adequate instrument to assess these learning outcomes.

<sup>39</sup> LOOS, E., IVAN, L., LEU, D.: „Save the Pacific Northwest Tree Octopus“: A Hoax Revisited. Or: How Vulnerable Are School Children to Fake News? In *Information and Learning Science*, 2018, Vol. 119, No. 9, p. 515.

<sup>40</sup> WARDLE, C., DERAOKSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09), p. 69.

<sup>41</sup> ZENG, X.: *Chinese Young People's Engagement with Journalism: Perspectives and Attitudes towards the News*. [Doctoral Dissertation]. Bournemouth, Dorset, England : Bournemouth University, 2014, p. 225.

<sup>42</sup> KATSAOUNIDOU, A. et al.: *Mathe the Game: A Serious Game for Education and Training in News Verification*. In *Education Sciences*, 2019, Vol. 9, No. 155, p. 4.

<sup>43</sup> KLEEMANS, M., EGGINK, G.: Understanding News: The Impact of Media Literacy Education on Teenagers' News Literacy. In *Journalism Education*, 2016, Vol. 5, No. 1, p. 75.

<sup>44</sup> WALRAVEN, A., BRAND-GRUWEL, S., BOSHUIZEN, H.: Fostering Students' Evaluation Behaviour While Searching the Internet. In *Instructional Science*, 2013, Vol. 41, No. 1, p. 143.

<sup>45</sup> ROOZENBEEK, J., VAN DER LINDEN, S.: The Fake News Game: Actively Inoculating Against the Risk of Misinformation. In *Journal of Risk Research*, 2018, Vol. 22, No. 5, p. 3-6.

<sup>46</sup> ROOZENBEEK, J., VAN DER LINDEN, S.: Fake News Game Confers Psychological Resistance Against Online Misinformation. In *Palgrave Communications*, 2019, Vol. 5, No. 65, p. 1-10.

<sup>47</sup> NATIONAL LITERACY TRUST: *NewsWise: Pilot Report*. London : National Literacy Trust, 2018. Available at: <<https://files.eric.ed.gov/fulltext/ED588802.pdf>>.

<sup>48</sup> WALRAVEN, A., PAAS, T., SCHOUWENAARS, I.: *Mediawijsheid in het Primair Onderwijs: Achtergronden en Percepties*. Hilversum; Nijmegen : Mediawijzer.net; ITS, Radboud University, 2013, p. 17.

<sup>49</sup> KLEEMANS, M., EGGINK, G.: Understanding News: The Impact of Media Literacy Education on Teenagers' News Literacy. In *Journalism Education*, 2016, Vol. 5, No. 1, p. 75.

<sup>50</sup> ROZENDAAL, E.: *Effectieve Mediawijsheidprogramma's: Inzichten en Aandachtspunten voor Uitvoerders, Ontwikkelaars en Onderzoekers*. [online]. [2018-04-04]. Available at <<https://www.mediawijzer.net/wp-content/uploads/sites/6/2018/06/MW-effectieveinterventies-rapport.pdf>>.

Integration in other subjects that are taught in school is another condition that increases the potential success of fake news education. In answering research question 1 we mentioned subjects like history, geography and social studies but even a more recent subject like citizenship education might provide a good context in which to teach people how to identify fake news.

## 4. Conclusion

Summarising the results from research questions 1 and 2, it is concluded that the most promising educational approach to making children news-literate is an activating instruction in creating their own news messages. News messages may be text messages as well as videos, audios, pictures, animations and so forth. It is preferred to integrate the activating instruction with one of the other subjects taught, for instance in a course on citizenship education. To assess the children's ability to identify real and fake news, it is a good idea to keep the online game Factitious in mind as an example.

## 5. Further research

In the next step of the current research project, students from The Hague University of Applied Sciences Teacher Training Institute (PABO) have been asked to develop appropriate learning and assessment materials. Those materials are currently being tested in an elementary school in Rijswijk (near The Hague). The results will be shared in Mediawijzer.net, the Dutch centre of expertise for media literacy.

A question for future research is whether the experiences of the Teacher Training students will give rise to new learning goals or content for the education of primary school teachers in the field of media education.

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## Bibliography and sources

BALČYTIEŅĒ, A., WADBRING, I.: News Literacy: Reinventing the Ideals of Journalism and Citizenry in the 21st Century. In WADBRING, I, PEKKALA, L. (eds.): *Citizens in a Mediated World: A Nordic-Baltic Perspective on Media and Information Literacy*. Göteborg : Nordicom, 2017, p. 31-44.

COOK, J., LEWANDOWSKY, S., ECKER, U.: Neutralizing Misinformation through Inoculation: Exposing Misleading Argumentation Techniques Reduces their Influence. In *PloS One*, 2017, Vol. 12, No. 5, p. 1-12. ISSN 0175799.

HOSSOVÁ, M.: Fake news and disinformation: Phenomenons of post-factual society. In *Media Literacy and Academic Research*, 2018, Vol. 1, No. 2, p. 27-35. ISSN 2585-9188.

KANIŽAJ, I., LECHPAMMER, S.: The Role of Organisations of Journalists in Promoting Media Literacy : Building Credibility and Trust. In *Media Literacy and Academic Research*, 2019, Vol. 2, No. 1, p. 24-37. ISSN 2585-9188.

KATSAOUNIDOU, A. et al.: MatHe the Game: A Serious Game for Education and Training in News Verification. In *Education Sciences*, 2019, Vol. 9, No. 155. p. 1-15. ISSN 2227-7102.



- KENNISNET: *Monitor Jeugd en Media 2017*. [online]. [2020-10-06]. Available at: <[https://www.kennisnet.nl/app/uploads/kennisnet/publicatie/jeugd\\_media/Kennisnet\\_Monitor\\_Jeugd\\_en\\_Media\\_2017.pdf](https://www.kennisnet.nl/app/uploads/kennisnet/publicatie/jeugd_media/Kennisnet_Monitor_Jeugd_en_Media_2017.pdf)>.
- KLEEMANS, M., EGGINK, G.: Understanding News: The Impact of Media Literacy Education on Teenagers' News Literacy. In *Journalism Education*, 2016, Vol. 5, No. 1, p. 74-88. ISSN 2050-3903.
- KNIGHT, E., MOHAMMADI, R., LE BOMIN, L.: *Game of Fakes: An Entertaining Approach to Analyzing How Awareness of Fake News Affects Trust in News Media*. [online]. [2018-10-20]. Available at: <<https://mastersofmedia.hum.uva.nl/blog/2018/10/20/game-of-fakes/>>.
- LAUF, E., SIERHUIS, R., WEGGEMANS, V.: *Mediamonitor 2018*. [online]. [2020-10-06]. Available at: <<https://www.mediamonitor.nl/wp-content/uploads/Mediamonitor-2018-Reuters-Institute-Digital-News-Report-Nederland-2018.pdf>>.
- LOOS, E., IVAN, L., LEU, D.: „Save the Pacific Northwest Tree Octopus“: A Hoax Revisited. Or: How Vulnerable Are School Children to Fake News? In *Information and Learning Science*, 2018, Vol. 119, No. 9, p. 514-528. ISSN 2398-5356.
- MARDA, V., MILAN, S.: *Wisdom of the Crowd: Multistakeholder Perspectives on the Fake News Debate*. Philadelphia, PA : Internet Policy Observatory, Annenberg School of Communication, University of Pennsylvania, 2018.
- MYHRE, E.: *Supranational or Compartmental: Applying the Question of European Union Identity to the Topic of Disinformation*. Harrisonburg, VA : James Madison University, 2019.
- NATIONAL LITERACY TRUST: *NewsWise: Pilot Report*. London : National Literacy Trust, 2018. [online]. [2020-10-06]. Available at: <<https://files.eric.ed.gov/fulltext/ED588802.pdf>>.
- O'CONNOR, C., WEATHERALL, J. O.: *Misinformation Age: How False Beliefs Spread*. New Haven; London : Yale University Press, 2019.
- RIJKSOVERHEID.NL : *Desinformatie en Nepnieuws*. [online]. [2020-10-06]. Available at: <<https://www.rijksoverheid.nl/onderwerpen/desinformatie-nepnieuws>>.
- RODRIGUEZ, S.: *Mark Zuckerberg Says Facebook Will Allow Users to Turn Off Political Ads*. [online]. [2020-6-17]. Available at: <<https://www.cnn.com/amp/2020/06/17/facebook-will-allow-users-to-turn-off-political-ads-mark-zuckerberg.html>>.
- ROOZENBEEK, J., VAN DER LINDEN, S.: The Fake News Game: Actively Inoculating Against the Risk of Misinformation. In *Journal of Risk Research*, 2018, Vol. 22, No. 5, p. 570-580. ISSN 1366-9877.
- ROOZENBEEK, J., VAN DER LINDEN, S.: Fake News Game Confers Psychological Resistance Against Online Misinformation. In *Palgrave Communications*, 2019, Vol. 5, No. 65, p. 1-10. ISSN 2055-1045.
- ROZENDAAL, E.: *Effectieve Mediawijsheidprogramma's: Inzichten en Aandachtspunten voor Uitvoerders, Ontwikkelaars en Onderzoekers*. [online]. [2018-04-04]. Available at: <<https://www.mediawijzer.net/wpcontent/uploads/sites/6/2018/06/MW-effectieveinterventies-rapport.pdf>>.
- SCHMITT, J. B. et al.: Critical Media Literacy and Islamist Online Propaganda: The Feasibility, Applicability and Impact of Three Learning Arrangements. In *International Journal of Conflict and Violence*, 2018, Vol. 12, No. 1, p. 1-19. ISSN 1864-1385.
- STANFORD HISTORY EDUCATION GROUP: *Evaluating Information: The Cornerstone of Civic Online Reasoning: Executive Summary*. Stanford (CA) : Stanford History Education Group, 2016.
- STAUSS, C.: *Critical Constraints in the Classroom: Assessing How Teachers Approach Media Literacy in Middle and Secondary Schools*. [Master Thesis]. Oregon : University of Oregon, 2012, 144 p.
- TAKAHASHI, A.: Education's Role in Solving the Contemporary „Fake News“ Problem. In VANDERHEYDEN, M. (ed.): *The New State of the News: Confronting Misinformation in the Digital Age*. Washington : University of Washington, 2018, p. 51-60.

TANDOC, E., LIM, Z. W., LING, R.: Defining „Fake News.“ In *Digital Journalism*, 2018, Vol. 6, No. 2, p. 137-153. ISSN 2167-0811.

ÜNAL, R., ÇIÇEKLIOĞLU, A.: The Function and Importance of Fact-Checking Organizations in the Era of Fake News: Teyit.org, an Example from Turkey. In *Media Studies*, 2019, Vol. 10, No. 19, p. 140-160. ISSN 2690-6163.

WALRAVEN, A., BRAND-GRUWEL, S., BOSHUIZEN, H.: Fostering Students' Evaluation Behaviour While Searching the Internet. In *Instructional Science*, 2013, Vol. 41, No. 1, p. 125-146. ISSN 0020-4277.

WALRAVEN, A., PAAS, T., SCHOUWENAARS, I.: *Mediawijsheid in het Primair Onderwijs: Achtergronden en Percepties*. Hilversum; Nijmegen : Mediawijzer.net; ITS, Radboud Universiteit, 2013.

WARDLE, C., DERAKHSHAN, H.: *Information Disorder: Toward an Interdisciplinary Framework for Research and Policy Making*. Strasbourg : Council of Europe, 2017 (DGI(2017) nr. 09).

ZENG, X.: *Chinese Young People's Engagement with Journalism: Perspectives and Attitudes towards the News*. [Doctoral Dissertation]. Bournemouth, Dorset, England : Bournemouth University, 2014, XIII, 287 p.

ZEZULKOVA, M.: *Whole Person Hermeneutic Media Learning in the Primary Classroom: An Intercultural Grounded Philosophy* [Doctoral Dissertation]. Bournemouth, Dorset, England : Bournemouth University, 2015, 270 p.

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