

Creating news: An activating approach to make children news literate

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Abstract. The purpose of this research is to find evidence for the assumption that allowing children to create their own news messages is an effective approach to teach them how to distinguish between reliable news and fake news. Three students of the primary teacher training programme of The Hague University of Applied Sciences developed five lessons concerning fake news and five Kahoot! quizzes for each of those lessons. They taught the lessons they developed under the supervision of a primary school teacher and one of their lecturers from the university.

A Friedman test on the scores of the Kahoot! quizzes indicate that the children made progress over the course of the study. In addition, it appears that the children appreciated the lessons and that they have learned how news is created and how fake news can be recognised. The outcomes of this study have prompted a larger, international Erasmus+ project. Schools and libraries in three countries will investigate similar innovative blended-learning approaches for pupils between ages 12 to 15.

Keywords: media literacy; news literacy; fake news; primary education

1 Introduction

Children grow up with an abundance of information mainly from the internet and social media. In December 2016, it was reported that 80% of 11-year-old children growing up in the Netherlands had a mobile phone with internet access [1]. We do not have more recent statistics for this age group, but we know that from the age of 12 – the age that children enter secondary education – almost all youngsters have access to a mobile phone with internet [2]. WhatsApp, Snapchat and TikTok have immense popularity among young adolescents; however, not all texts, films and photos created and read on these platforms are considered reliable information.

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The phenomenon of fake news is an important topic, especially since the 2016 American presidential election, President Donald Trump's public speeches and his supporters' rush on the U.S. Capitol in January 2021. Although the residents of the Netherlands are regarded as relatively resistant to misinformation and disinformation [3], the Dutch administration has nonetheless formulated a policy to prevent the country's democracy from being threatened. The main goal of that policy is to make citizens resistant to fake news and help them recognise information that is unreliable [4]. Their decision is prudent since we know that the media literacy skills of a variety of groups of Dutch people, especially adolescents, often have shortcomings [5].

Teaching children how to recognise fake news messages is therefore relevant, even in the Dutch context. A former literature review [6] concluded that it is an effective pedagogical approach to have children create their own news messages if you want them to learn how to recognise 'false news messages' [see for example 7]. Activating learning methodologies such as this not only helps children understand how news is created, but also how they can become permanently engaged with news and the news industry.

With that assumption in mind, we asked three students from The Hague University of Applied Sciences Teacher Training Institute to design and execute a series of five lessons to teach children in their two last school years of elementary education (11- and 12-year-olds). The lessons were designed to teach the children what fake news is, how and why it is created, and how it can be distinguished from reliable news messages. The university students also created five Kahoot! quizzes, to be given at the end of each class, to examine whether the children were able to recognise the difference between fake news and reliable news items. Under the supervision of one of the children's regular teachers, the classes were given in a combined group of the last two years of elementary education (groups 7 and 8) at Kindcentrum Snijders. Kindcentrum Snijders is a primary school in Rijswijk, a suburb of The Hague, where children use an iPad that is provided and managed by the school from group 2 to group 8. The children who were involved with this research project were already familiar with digital devices and media. Due to the COVID-19 pandemic in May and June 2020, the first two class meetings were organised into smaller, in-person groups and each was taught twice. During meetings 3, 4 and 5 the classes were no longer broken up into smaller groups.

2 Research questions

The main question for the research was: To what extent is letting children create their own news messages an effective approach to teaching them how to distinguish between reliable news and fake news? This educational approach is regarded as effective when children appear to make progress throughout the quantitative measurements (the quizzes) but also go through a positive learning *process*. To achieve the latter facet, it is important that the children are engaged in the learning activities, that they enjoy the class, and that they feel they have learned a lot. The research questions asked for both facets, namely the quantitative and qualitative aspects of effective learning.

The research questions were:

RQ1: To what extent did the children make progress in the recognition of fake news?

RQ2: What and how have the children learned according to their self-assessment?

RQ3: What and how have the children learned according to their primary school teacher who coached the students?

3 Methodology

Under the supervision of the primary school teacher, the students at the Teacher Training Institute developed four products for each class (all in Dutch):

- A 'didactic route form' with a description of the course content, learning objectives, starting situation, teacher actions and the learning activities of the pupils.
- A Microsoft PowerPoint presentation to be used during the class.
- A Kahoot! quiz to be used as a closing activity for each class.
- An explanation of the answers of the Kahoot! quizzes.

The learning content was distributed over five classes, one class per week, as follows:

1. Media theory: recognition of fake news using a checklist [8].
2. Checking news messages using critical source investigation via the internet.
3. Creating fake photos with Adobe Photoshop Mix (photo editing app for iPad).
4. Creating news stories with 'wild headlines'.
5. Creating a video about the story in class 4 with iMovie (video editing app for iPad).

Each Kahoot! quiz consisted of ten true or false questions. The examples used in the quiz were downloaded from mainstream news media sites, satirical internet sites, clickbait sites with edited pictures and junk news sites. The university students chose the Kahoot! platform for their quizzes because they had experience with the program and because they knew that these competitive quizzes are very popular among primary school pupils.

Figure 1 gives an example of a true-false question from quiz number 4. The story is from a satirical internet site (Nieuwspaal.nl) and explains that there was an enormous line of people waiting to enter a small face mask shop because 'no one wanted to be infected by COVID-19'. The statement in the Kahoot! quiz was: This message on the website Nieuwspaal is true.

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ENORME RIJ BIJ MONDKAPJESWINKEL: “NIEMAND WIL BESMET WORDEN”

De tijdelijke mondkapjeswinkel in Den Haag kan de drukte nauwelijks aan. Honderden mensen stonden zondagmiddag opeengepakt in de rij. Allemaal probeerden ze een paar mondkapjes te bemachtigen.

Ondernemer Pim Timmerman opende dit weekend een tijdelijke mondkapjeswinkel in een leegstaand pand. “Het is een gekkenhuis”, vertelt hij. “Ik wist wel dat dit een gouden handelkje is, maar op zó veel belangstelling had ik niet gerekend. Mensen staan te dringen voor de kassa. Vanmiddag stonden er wel tweehonderd mensen in mijn kleine winkeltje. Logisch, want niemand wil besmet worden.”



Fig. 1. Enormous line of people waiting to enter the face mask shop: “No one wants to be infected” (Source: Nieuwspaal.nl)

To answer RQ1 (‘To what extent did the children make progress in the recognition of fake news?’), the mean total score and the median score for each quiz was calculated. A Friedman test was carried out to determine the differences between the five quizzes and a Dunn-Bonferroni post hoc test was done for pairwise comparison.

RQ2 was answered using the results from a survey among the children after the fifth lesson and RQ3 was answered using the input during weekly meetings on Microsoft Teams with the researcher, the primary school teacher, the student coach and the students themselves. Because of the COVID-19 pandemic in spring 2020 these meetings could not be organised physically.

The primary school teacher informed all the children’s parents by e-mail about the project and every parent consented to their child’s participation.

4 Results

RQ1: Progress in the recognition of fake news (based on the results of the quizzes)

The children that participated in the project were from a combined group (groups 7 and 8) of 28 children. Table 1 gives the mean score and the median for each quiz that was taken.

Table 1. Mean score and median for five Kahoot! quizzes (scale 0-10)

	N=	Mean	Median
Quiz 1	21	6.2	6
Quiz 2	25	7.5	7
Quiz 3	26	5.5	5
Quiz 4	25	7.0	7
Quiz 5	24	7.9	8

Children who missed a class meeting varied each meeting. For this reason, only 16 children participated in all 5 quizzes. Table 2 gives the mean and median score for all five quizzes for these 16 children.

Table 2. Mean score and median for five Kahoot! quizzes (scale 0-10) for children who participated in all quizzes

	N=	Mean	Median
Quiz 1	16	6.5	7
Quiz 2	16	7.6	7
Quiz 3	16	5.8	5,5
Quiz 4	16	7.3	7
Quiz 5	16	7.8	8

From Tables 1 and 2, it is clear that quiz number 3 yielded the lowest scores. The students from the Teacher Training Institute, who composed the quizzes, previously indicated that quiz number 3 differed from the other quizzes. This quiz focused explicitly on the manipulation of photos, the subject of the class meeting number 3. In the questions of quiz number 3, there was no information regarding the source of a photo, something that was available in the other four quizzes. Therefore, quiz number 3 is not included in the remainder of the analysis. The other four quizzes were comparable in format and also in difficulty.

To analyse the differences in the scores for quizzes number 1, 2, 4 and 5, a Friedman test ($N=16$) was performed. The results revealed that the scores for the four quizzes differed ($\chi^2(3) = 10.815, p = .013$). The results for the additional Dunn-Bonferroni post hoc tests indicated that the difference between quiz number 1 and quiz number 5 was significant ($p < 0,05$). There were differences between the other pairs (1-2, 1-4, 2-4, 2-5 and 4-5) but those differences were not significant.

RQ 2: What and how have the children learned according to their self-assessment?

From the survey taken after the last class meeting, it appeared that twelve children out of 28 most enjoyed the meeting where they worked on photo editing and manipulation. For thirteen children the video editing class was the most pleasurable. This does not mean that those classes were the ones that held the most informative learning experiences for them. When they were asked which subject meeting they *learned* the most from, their answers were evenly distributed across all subjects (Table 3).

Table 3. Answers for the single select multiple choice question ‘During which class meeting did you learn the most?’

Class Meeting	Subject of the class	Number of responses
1	Recognition of fake news using a check list	5
2	Critical source investigation on the internet	5
3	Creating fake photos	8
4	Creating news with ‘wild headlines’	5
5	Creating videos	4

To the follow-up question (What did you learn during this meeting?), they answered that they learned “that it is easy to see whether something is real or fake” (class meeting 2) and “how to immerse yourself in news and how to investigate what is happening in reality” (class meeting 4), among other things. Almost all children who indicated that they learned the most in class meeting 3 (photo editing) also explained that they learned how to work with the app Photoshop Mix. In response to an open question about how the children *appreciated* the classes about fake news, 19 of them reacted completely positive while 7 children gave a more moderately positive response (for instance “quite nice but I don’t need more” and “a little nice”). Two children did not answer this question at all.

RQ 3: What and how the children learned according to the primary school teacher who coached the students

The fact that the children appreciated the series of meetings about fake news was not only apparent from the survey that was taken afterwards. This was also apparent when children from a parallel group asked the primary school teacher to install the Photoshop Mix app on their iPads as well. Also, during the meetings with the group that was involved with the experiment, it was also clear that the children were enthusiastic about the subject matter. The Kahoot! quizzes challenged them to do their best but, according to the primary school teacher, and the children were also really stimulated to think about the subject of fake news on the internet.

In meeting number 2, the children verified the sources of news stories on the internet. The teacher remarked that from that moment onwards, the children changed their behaviour while answering the quiz items in Kahoots! More than during the first quiz, they tried to check the sources of a message. But they still tried to find the answer quickly. The primary school teacher during the evaluation of the project said, “I saw the children using ‘split screen’ on their iPads with the Kahoot! on one side of their device and the Safari browser on the other side. They were absolutely focussed on finding the right answer and then pressing the correct answer as fast as possible”. To make children active users of the internet and investigate the reliability of the sources of those news messages was one of the learning goals of the project. The university students succeeded in stimulating the children to acquire this habit, even while they also try to answer as

quickly as possible.

The primary school teacher also remarked that the topic of meeting number 3 was quite different from that of the other meetings (less emphasis on the verification of information sources) but the meeting itself and the subject of it (photo manipulation), were well chosen. Children worked with the Adobe Photoshop Mix app and some of them created wonderful artifacts (figures 2 and 3). Problematic in the educational design was the lack of time for meeting number 5. In the meeting, the children were supposed to create a script and film then edit their assignment as a group. To complete all these tasks the children needed more time the following week. It should be noted that some of the products in week 5 (the films based on the stories from week 4) were of expectational quality. Due to privacy concerns, we cannot provide links to the films that were created in meeting 5 but Figure 4 gives an example of a story that was created in meeting 4.



Fig. 2 and 3. Artifacts that children created with the Adobe Photomix app



Fig. 4. News story created by one of the groups.
The headline says: 'Child jumps off roof because of an alien'

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All materials the university students created for their classes (didactic route forms, PowerPoint presentations, Kahoot! quizzes) are in the Dutch language. They are stored in the Dutch universities of Applied Sciences Repository (HBO Kennisbank) and can be downloaded for later use by, for instance, primary school teachers and educational staff from other organisations, e.g., public libraries.

5 Conclusion

The main question that we intended to answer in this research project was whether allowing children to create their own news messages is an effective approach to teach them how to distinguish between reliable news and fake news. To find an answer to this question, we used five Kahoot! quizzes with true or false questions as part of a series of five lessons where children created fake photos, news stories and videos.

Although it is hard to claim there is causality between the learning activities and the scores on the quizzes, we did find indications that the children became better at recognising fake news during the lesson's series, particularly in recognising satiric news stories and fake photos. The scores for quiz number 5 were statistically higher than those for quiz number 1. An explanation for the higher scores from quiz number 2 onwards is that children used the internet to verify the source of a story or a photo. But the children indicated that they also learned how fake news is invented and how it can be recognised. According to the primary school teacher, the educational approach to make children create their own fake news motivated the children to participate in the learning activities and aroused their interest in 'news'. The use of iPad apps in the classes helped the children to enjoy the lessons. The Kahoot! quizzes also motivated the children to do their best to distinguish reliable news sources from fake news.

6 Discussion

The total number of children that participated in this research was 28. The sample size is not sufficient to presume that the conclusions from this research project can be transferred to other groups of children or different circumstances. Many differing variables, for instance how experienced the children are in the use of digital media and the personality of the teacher, or as in our project that of the students from the Teacher Training Institute, are significant factors that influenced the results of this research project. However, the assumption that an activating educational approach like making children create their own news stories, stimulates children to understand the phenomena of fake news has become, at least for this group, very plausible. This conclusion is also based on observations by the primary school teacher and comments provided by the children. Furthermore, there were indications that the Kahoot! quizzes not only functioned as instruments to measure the progress of the children (as they were designed to in the research proposal), but they also were a catalyst to make the children learn about fake news. This last function of the quizzes is in line with results from the research literature about Classroom Response Systems. Chaiyo and Nokham found indications

that the use of these interactive technologies creates strong learning experiences for children [9].

For the professional practice of primary education this research resulted in five-course designs, PowerPoint presentations and Kahoot! quizzes that functioned well, at least in this case. All these materials can be downloaded from the Dutch Universities of Applied Sciences Repository (HBO Kennisbank) and can be adapted for use in someone's own educational situation (CC BY).

The use of competitive Kahoot! quizzes whose scores were partly determined by the speed of answers prompted the question of whether the element of time could have influenced the number of correct answers. Another student project developed an individual quiz in Google Forms but the students from the Teacher Training Institute did not prefer this alternative because it was more boring than the other options. The speed of recognising fake news is also a factor in everyday life. This is because people do not always have the opportunity to check all messages in real life. Intuition will always play a role in quickly recognising disinformation. The usage of the time factor as a competitive element is therefore logical.

In an era when fake news is a growing phenomenon, we must promote digital educational readiness in a way that is meaningful to young people. Recently, a follow-up Erasmus+ project with participation of our research group has been granted in which schools and libraries in three countries will investigate similar innovative blended learning approaches for pupils aged 12 to 15.

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