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Strategies for Teaching Disinformation Awareness in the Polish Educational System[*]

Strategie nauczania na temat dezinformacji w polskim systemie edukacji

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Abstract. New technologies are readily available in our everyday lives, and even primary school children now possess mobile phones with Internet connections. It is crucial to recognize that the utilization of these new technologies comes with various risks, one of which is the accessibility of unverified information that can lead to disinformation. This article aims to present the programs, strategies, and tools implemented in the educational system in Poland to address the teaching of disinformation and critical thinking. A narrative review examines methods in Poland's education system to combat disinformation and foster critical data analysis among students, using a multi-step search strategy to select relevant English or Polish sources from academic and news databases, including peer-reviewed articles, government reports, educational materials, and websites. The core curriculum mandates instruction on disinformation and fake news phenomena in both primary and high schools. This instruction is integrated into subjects such as Polish language and computer science. At a higher education level, there are multidisciplinary scientific programs, primarily designed for journalism students. We propose a greater emphasis on media education in Poland across all levels of education. Consideration should be given to the creation of dedicated subjects focusing on media literacy in primary and high schools. Additionally, on a higher education level, there should be programs tailored to students from various fields, as the issue of fake news spans a wide range of topics.

Keywords: disinformation; fake news; high school; primary school; university; Poland

Abstrakt. Nowe technologie stały się powszechne w codziennym życiu, nawet dzieci ze szkół podstawowych posiadają obecnie telefony komórkowe z dostępem do Internetu. Ważne jest, aby zdawać sobie sprawę, że korzystanie z tych nowych technologii wiąże się z różnymi zagrożeniami. Jednym z nich jest dostępność niezweryfikowanych informacji, które mogą prowadzić do dezinformacji. W artykule zamieszczono przegląd programów, strategii i narzędzi wdrożonych w systemie edukacji w Polsce, których celem jest nauczanie przeciwko dezinformacji oraz kształtowanie krytycznego myślenia. W przeglądzie narracyjnym przeanalizowano metody stosowane w polskim systemie edukacji do zwalczania dezinformacji oraz wspierania krytycznej analizy danych wśród uczniów, wykorzystując wieloetapową strategię wyszukiwania w celu wybrania odpowiednich angielskich lub polskich źródeł z akademickich i informacyjnych baz danych, w tym z recenzowanych artykułów, raportów rządowych, materiałów edukacyjnych i stron internetowych. Podstawa programowa nakazuje nauczanie o zjawiskach dezinformacji i fake newsów zarówno w szkołach podstawowych, jak i w szkołach średnich. Nauczanie to jest zintegrowane z takimi przedmiotami jak język polski i informatyka. Na poziomie szkolnictwa wyższego istnieją multidyscyplinarne programy naukowe, przeznaczone głównie dla studentów dziennikarstwa. Proponujemy położenie większego nacisku na edukację medialną w Polsce na wszystkich poziomach edukacji. Należy rozważyć stworzenie dedykowanych przedmiotów koncentrujących się na umiejętności korzystania z mediów w szkołach podstawowych i średnich. Ponadto na poziomie szkolnictwa wyższego powinny istnieć programy dostosowane do studentów różnych kierunków, ponieważ kwestia fake newsów obejmuje szeroki zakres tematów.

Słowa kluczowe: dezinformacja; fake newsy; szkoła średnia; szkoła podstawowa; uniwersytet; Polska

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INTRODUCTION

Disinformation refers to deliberately spreading false or misleading information with the intention of deceiving or manipulating people. Fake news, on the other hand, typically refers to fabricated news stories or content presented as factual reporting, often for the purpose of sensationalism, misinformation, or influencing public opinion.

ANALYSIS OF THE AVAILABLE LITERATURE

Nowadays, the problem of fake news and disinformation is a permanent element of our everyday life. It affects our decisions (of various types), our well-being, and the way we perceive the world (Nowak, Matusevic 2020; Olechowska 2022). The Polish report drew attention to the topics of the most frequently spread fake news. Top five categories included: politics and economy, social fake news (news from the world, scandals, international unions, health and food, and animals), worldview fake news (mainly religious topics), pseudoscientific reports (mainly related to health and global warming), and tragic news from the world (Rosińska 2021). Most of the experts consider "critical thinking" as a key in media literacy. Moreover, a high level of analytical thinking contributes to accuracy in fake news detecting (Rosińska, Brzóska 2020). Media literacy could be considered a crucial competency in today's societies and one of the most effective tools for counteracting fake news, as well as promoting independent, pluralistic media and information systems. Unfortunately, media literacy resources showed that Poland had 53 points (on a 0–100 scale), holding the 18th position in the group of 35 European countries (Kuś, Barczyszyn-Madziarz 2020). The problem of disinformation concerns not only adults. Unfortunately, media education in the Polish educational system is still institutionally underdeveloped. Young people have digital proficiency, but it does not mean that they are aware recipients of dangerous content found on the web. They often can't distinguish between reliable and fake, harmful information. Teenagers are recipients of fake news and may contribute to dissemination of fake news without realizing the consequences of their actions. It comes from less life experience and a greater tendency to accept information uncritically in comparison to adults. More than 20% of students do not pay attention to the source from which they get information, and they do not verify its reliability. Also 20% of the teenagers never check the credibility of the information found on the Internet and shared with others (Borkowska, Karelus 2022). Therefore, it is important to teach students to help understand fake news phenomena, suggest how to be more sensitive to fake news, and

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what tools can be used to verify the information (Nowak, Matusevic 2020). It is a huge challenge for teachers to teach students critical reception of news and information (Walter 2018). Even though media education in Poland still needs improvement, there are many interesting initiatives helping understand fake news and disinformation phenomena.

METHODS

To comprehensively investigate programs, strategies, and tools implemented in the educational system in Poland to address disinformation and enhance students' critical analysis of information, a narrative review was conducted.

Modern times are characterized by widespread access to information. People rely on this information to make decisions in various aspects of life, and it significantly influences their well-being and perception of the world. However, the quality and accuracy of this information are not always reliable. This underscores the importance of media literacy in today's digital age, making it a crucial component of the educational system.

A multi-step search strategy was employed to identify relevant literature and resources. Relevant keywords and phrases were identified, including "disinformation", "fake news", "media literacy", "educational programs", "Poland", and "critical thinking". Both academic databases, such as PubMed, Google Scholar, Scopus, and news databases, were selected to ensure a broad coverage of peer-reviewed articles, reports, and educational resources. Criteria for including sources were defined, including the requirement for sources to be in English or Polish and published within a specific timeframe. Sources such as peer-reviewed articles, government reports, educational materials, and relevant websites were considered.

FAKE NEWS AND EDUCATION IN ELEMENTARY AND HIGH SCHOOLS IN POLAND

The fake news and disinformation problem is being discussed in Polish elementary and high schools. The core curriculum for Polish language lessons for elementary school students includes several aims related to fake news problems. Students should be able to (Ministry of Education 2017b):

- use information from various sources;
- collect information and select information;
- develop the skills of effective use of information technology and Internet resources;

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– use these resources to present their own interests;
– develop the ability to critically evaluate the obtained information.

In elementary schools these learning objectives are implemented for children aged 10 years or more. However, there are also lessons with more challenging examples which are implemented in older classes for children aged 13 or more (Center for Civic Education 2022). In the core curriculum for computer science, it is stated that students aged 13 years or older should critically evaluate information and its sources (webpages) in terms of reliability and credibility (Ministry of Education 2017a). In the core curriculum for high schools, objectives of teaching regarding fake news are much more detailed. It is stated that students during Polish language classes should develop the ability to understand the role of the media and their impact on people's behavior and attitudes, and be able to critically use and assess media news (Ministry of Education 2018).

Teachers having classes about fake news and disinformation may use different lesson scenarios available on the Internet. There are many sources with relevant content for both teachers and students. These materials are available in Polish and are dedicated to Polish teachers and students. Based on these scenarios, lessons should start from defining basic terms like "fake news", "clickbait", "fact checking", etc. It is recommended for teachers to give examples of fake news, disinformation, manipulation, etc., from different countries. It is important to present statistics on these phenomena and discuss their consequences. Students can have conversation moderated by the teacher on their own experiences with fake news (Nowak, Matusevic 2020).

There are several examples of exercises which can be used during classes. One of them is working in groups on making lists of reasons for creating fake news. The following questions can be used: Who creates fake news? Why and for what purpose does someone create them? Why does someone publicly manipulate the facts? It is also recommended to use articles containing both real and fake news during classes. Students work in groups and must decide what part of the article is fake news and what is not. There are several guidelines which help decide. It is recommended to read not only headlines, important information like date, place, webpage, and author should be carefully checked (School with Class Foundation 2017). There are several important questions that can be used when working on the articles and deciding what is fake news and what is not: When was the webpage created? Who and how benefits from this information? Who and how loses on this information? Is the author credible? Can you trust that webpage and how can you know it? Then students present their results in front of their colleagues and discuss their results (Center for Civic Education 2022). Another example of the exercise is making false news. The teacher gives worksheets divided into several areas, e.g. health, education,

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sport, celebrities, science, and online games. Students work in groups and every team works on one issue. The task for the students is to create and write false news in the most credible way. Then, group leaders read and discuss them in front of the class (Ministry of Digital Affairs, NASK National Research Institute 2023).

Teachers during lessons should pay attention to the fact that fake news is classified as dangerous and harmful content available online. It is important to point out that nowadays, using the Internet and mobile devices, false information is created and disseminated very quickly. Teachers should show different verification tools which can help in checking information, e.g. webpages. They should also explain good practices on how to fight fake news. It is worth explaining why students should be careful when they share information with others. Fake news should be denied, removed, and there is nothing wrong with admitting and apologizing (on social media or in a discussion) that one initially believed in false information (School with Class Foundation 2017; Ministry of Digital Affairs, NASK National Research Institute 2023; Nowak, Matusevic 2020).

There are many interesting teaching methods related to fake news and disinformation phenomena. However, teaching about disinformation in Polish primary and high schools is carried out independently during several subjects. It means that content related to disinformation and fake news is interspersed with content of a different type. The teacher decides how much time and in what form he/she will implement the content related to disinformation. Because disinformation is in the core curriculum for different subjects, it is potentially taught by several teachers. This may result in more versatile forms of teaching, but the material can be less coherent. Considering the role played by the media in the modern world and the speed of transferring information, introducing a separate subject devoted to media education, media literacy, and critical evaluation of information should be considered.

FAKE NEWS INITIATIVES AT THE HIGHER EDUCATION (UNIVERSITY) LEVEL IN POLAND

Based on the core curriculum, students who finished high school should be able to critically evaluate found information. However, during studies on university education focused on critical thinking can be continued, but using different methods. Students at universities take part in scientific programs related to disinformation, which are usually more complex and innovative.

According to the "Perspektywy 2021" ranking, 25 universities offered journalism-related courses focusing on topics like fake news, media manipulation,

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and source credibility (Perspektywy 2021). It is important for journalists to possess the skill of discerning facts from opinions and identifying manipulated or false information (ibidem).

Addressing the issue of fake news and misinformation in Poland, workshops are being organized, particularly for students in journalism, social communication, and related fields. For example, Facebook and Polityka Insight organized workshops titled "How to Read in the Era of Fake News?" for several Polish universities (Press.pl 2018). The workshops aimed to raise awareness among students about the dangers of fake news and taught them how to prevent its spread. Students were given tasks to distinguish between true and false information and to develop recommendations for detecting fake news. The workshops emphasized the importance of being cautious online, not trusting catchy headlines, and relying on multiple sources. The students concluded that educational activities on information credibility should start as early as primary school (ibidem).

A Polish university organized a scientific conference titled "Mediatization of Politics: Fake News and Fact-Checkers" to explore the role of fake news and fact-checkers in political reporting (Maria Curie-Skłodowska University 2018). The conference addressed the increasing presence of non-professional actors producing and distributing news through new media, particularly social media. This phenomenon has made fake news more prevalent than ever before (ibidem).

A project called "Report a Troll" was initiated by Nicolaus Copernicus University in Toruń (2022). Students verified false information about the war in Ukraine using the platform zglostrolla.pl. The project was led by industry experts in IT and social media monitoring (ibidem).

The Central European Digital Media Observatory (CEDMO) is an independent hub researching disinformation in Central Europe (SWPS University 2022). It brings together universities, fact-checkers, and AI researchers to identify and combat information disorders. The project aims to study fake news structure, dissemination, and impact, comparing findings across countries. CEDMO provides tools and educational resources to enhance media literacy. Its focus on Poland addresses the low awareness of disinformation (ibidem). CEDMO launched the second edition of the academic fact-checking competition "DETEKTOR" in February 2023, encouraging students from across Poland to address the issue of fake news (SWPS University 2023). The main prize included a paid internship at the Demagog Association (in Polish: *Stowarzyszenie Demagog*), the first Polish fact-checking organisation. CEDMO also provides information on international conferences and research findings on the information environment and public opinions regarding the COVID-19 pandemic. Resources such as presentations and webinars on fake-checking tools and teaching about disinformation are

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available, targeting educators to engage young people in critical thinking and raise awareness about the problem (SWPS University 2022).

The "Click. Verify. Understand" (in Polish: "Kliknij. Sprawdź. Zrozum") project aims to help people in various Polish communities develop media literacy and evaluate the reliability of information (Information Society Development Foundation 2018). It provides a guide on mindful information usage and offers a downloadable poster with ten tips for using information responsibly. The project is designed for libraries and schools serving as an educational resource. It is an initiative of the Information Society Development Foundation.

The System for Detecting Disinformation Using Artificial Intelligence (SWAROG) project, conducted by the Bydgoszcz University of Science and Technology (2021), aims to develop AI algorithms for automatic classification and detection of fake news. The project, scheduled from December 1, 2021, to March 31, 2025, will result in an AI-based service capable of assessing the credibility of information published in the public space, particularly on the internet and social media. The solution will also address the dynamic nature of fake news, requiring adaptive predictive models to account for changing parameters in the analyzed news stream.

Academic institutions involved in countering disinformation include the military security sector (Website of the Republic of Poland 2021). The conference "Information Independence", organized by the Academic Center for Strategic Communication, discussed communication management and combating disinformation. The #fakeresistant (#fejkoodporni) campaign by the Academic Center for Social Communication and the Ministry of National Defense raised awareness about disinformation and included a YouTube video. A report on "Vulnerability to Disinformation" examined perceptions of fake news in regions affected by the state of emergency (ibidem).

In Poland, many interesting initiatives are being implemented dedicated to fighting disinformation and fake news at universities. Importantly, these initiatives are multidisciplinary, bringing together representatives of various professions. Taking into consideration that phenomena of fake news and disinformation concern many topics, e.g. health, politics, and economy, students of different faculties benefit from these programs. Taking into account that these programs are dedicated mostly to journalism students, there should be more initiatives dedicated to students of various fields.

Since 1999, the Polish education system has included an "interdisciplinary educational pathway" focused on media education. This initiative enabled students to develop critical thinking skills, analyze media content, and use various sources of information responsibly (Siemieniecki 2007). The implementation of this concept was tied to the core curricula of the education reform, with

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combating disinformation becoming a key element. In practice, this involved introducing teaching materials, lesson plans, and workshops into schools that allowed young people to learn about the mechanisms of media operations and practice verifying the information they received.

This initiative is also justified by international recommendations, such as those from UNESCO (2013), which view media education as a crucial competency in the information society era.

It is worth considering a detailed analysis of the extent to which media education elements are included in the curricula of fields such as national philology, cultural studies, political science, media studies, or communication studies, as this could provide a more interdisciplinary perspective on developing media competencies (Brosch 2017). For instance, philology often emphasizes the linguistic and cultural aspects of communication, facilitating the study of rhetoric and media discourse. In contrast, political science and communication studies focus on the media's impact on public opinion and phenomena such as propaganda and disinformation (Siemieniecki 2007).

EXAMPLES FROM OTHER COUNTRIES

Statistics show that more than 80% of EU citizens say that the fake news problem is an issue for their country and for democracy in general. Fifty percent of young (aged 15–30) people in the EU population indicate they need information skills and critical thinking to help combat fake news and extremism in their society (Council of Europe 2023).

The data above show that there is growing interest in spotting and fighting fake news and disinformation problems. However, data from the Organisation for Economic Co-operation and Development show that little over half of 15-year-olds in the European Union are being taught the methods of detection whether information is biased or subjective (European Commission 2022). Even though these data are disturbing, there are initiatives concerning methods of teaching about fake news and disinformation in Europe. Some examples from countries other than Poland are presented below.

The CoMMiTTed project is co-funded by Erasmus+. This project offers training materials for teachers to help them develop critical thinking skills. There are four countries included in this project: Portugal, Spain, the Netherlands, and Germany. The project comprises of the three main modules. The first one, called Pedagogic Observatory of Fake News, analyzes false information which links minorities and migrants to the COVID-19 pandemic. The second one, Online Teacher Education Modules, shows, e.g., how to identify disinformation and fake

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news. It helps understand the mechanism of the production and spread of fake news. The last part is an e-handbook for teachers and teacher trainers which compiles all the information and shows how CoMMiTTed can also be used as a tool in schools (European Commission 2023).

President of France Emmanuel Macron has said that children must be educated in critical thinking to be able to spot fake news and disinformation (Bremner 2023). In France, there is a media education course for children funded by the French government. The children learn how to verify and check online information. During the course, middle school pupils assess the credibility of the articles and explain their reasoning. In 2021, four million children took part in these courses (France24 2022).

Based on the 2019 report (Polizzi, Taylor 2019), it should be stated that there is an awareness in the UK of the disinformation problem in the digital era we live in. However, authors indicate that there is no clear framework on how to teach media literacy at schools. Authors of the report critically evaluate national curriculum in primary and secondary schools in relation to teaching about fake news and disinformation phenomena. They recommend revision of the national curriculum and promote methods of teaching that focus more on the ability to critically assess information. They also suggest that there should be training for teachers about methods of teaching media literacy and what resources can be used for this purpose. There are many online materials for UK teachers concerning media literacy, such as: Childnet Trust Me, BBC, Association for Citizenship Teaching (see Association for Citizenship Teaching 2022; BBC 2023; Childnet 2021).

There were also other reports concerning critical thinking and digital literacy. The House of Lords reports from 2017 and 2018 stated that digital literacy is one of the crucial skills and that the Department of Education should take responsibility for this (House of Lords and Select Committee on Communications 2017; Select Committee on Political Polling and Digital Media 2018).

Finland is a country that considers itself successful in combating disinformation. For the fifth time, it ranked first among 41 European countries in resilience against misinformation. Finland's educational system is considered one of the best in the world. It includes media literacy as a part of the national core curriculum. It means that teachers in Finland are required to teach critical reception of the information. Teaching about media literacy starts very early – in preschool. Media literacy is present while teaching different subjects, like mathematics, language, etc. One of the examples of teaching methods is that students are asked to edit their own photos to show how easy it is to manipulate information. Another example is searching for information online and analyzing the search algorithm. It shows that information which appears first is not always the most reliable (Gross 2023).

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DISCUSSION

Media literacy is vital in today's digital age, as it helps people distinguish between reliable information and fake news. Within the Polish education system, there are challenges in teaching young people to critically assess online information. Our findings suggest that systematic efforts are necessary to educate students about recognizing and responding to disinformation. In Poland, media education is integrated into the school curriculum, but there's a suggestion to introduce a dedicated subject focused on media education. Polish universities are offering specialized courses, primarily for journalism and communication students, to improve their critical thinking skills, but there is also a need to provide such courses to other university students (e.g. medical or IT) as well.

In addition, Poland has several fact-checking initiatives geared towards students and educators. These initiatives, notably Demagog and OKO.press, play a vital educational role in promoting media literacy and combating disinformation. Demagog's Fact-Checking Academy conducts workshops and tutorials, having already engaged over 3,800 participants. Additionally, they have developed an educational browser game called *Fajnie, że wiesz* (*Good for You to Know*) to teach fake news detection (Demagog 2020, 2021; Piekarz 2021).

The Modern Poland Foundation's "Media Education" (in Polish: "Edukacja Medialna") project, endorsed by the Ministry of Culture and National Heritage and the Ministry of Education and Science, offers a comprehensive, adaptable syllabus for media literacy across all educational levels. The Cegielski Center for Analysis (2020) also contributes through its "Disinfo Trick" ("Sposób na Dezinformację") program, which involves conducting 50 lessons nationwide to equip local organizations to educate secondary school students.

OKO.press (2019, 2023), while having a smaller role, has been instrumental in uncovering and reporting fake news to platforms like Facebook, leading to the closure of disinformation networks. Meanwhile, the "Safe on the Web" (in Polish: "Bezpieczni w Sieci") governmental project focuses on cybersecurity education, offering courses on Internet safety, cyber threats, and online privacy. Lastly, it's highlighted that media literacy is crucial, regardless of age or media consumption habits, emphasizing the need for innovative teaching methods in this field (Website of the Republic of Poland 2023).

Polish researchers – Cicha, Rutecka, Rizun, and Strzelecki (2021) – emphasize that neither age nor being an everyday consumer of the media environment guarantees the ability to operate it. Therefore, it is necessary to build the ability to use digital technologies and media consciously. Moreover, they suggest that there is an urgent need to introduce innovation in teaching (see Table 1).

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Table 1. Innovations in teaching according to Cicha, Rutecka, Rizun, and Strzelecki

Purpose of media usage	Skills and competencies
Information	ability to search, retrieve, select, use, and verify information
Use of media environment	necessary skills to communicate effectively
Media language	language competencies necessary to understand media content
Creative	production of media content
Ethics	internet hate, cyberbullying, sexting, and other unethical behaviour
Cybersecurity	safe usage of internet devices
Law	responsibilities and laws of Internet users
Economics	value of information
Digital competencies	basics of computer usage, design of IT thinking
Mobile security	safe usage of mobile devices

Source: Cicha et al. (2021).

Erasmus+ project "Students' of Higher Education Critical Digital Literacy Development against Disinformation", planned for 2022–2025, was created and launched by an institution from Poland – Medical University of Gdańsk (Erasmus+ 2023). It seeks to align higher education courses with future professional needs and the evolving labor market by enhancing critical digital literacy (CDL) among students. Also, it aims to identify democratic goods at risk from disinformation and promote student-centered teaching strategies. The project's activities include data collection, the development of a CDL Competences Framework, quality-assurance criteria, educational scenarios, and an Educators' e-Toolkit, all aimed at fostering CDL and countering disinformation in higher education across multiple countries (ibidem).

Moreover, the importance of educating about disinformation in Poland is underscored by the current political climate. It's widely recognized that spreading false information on platforms like social media, especially regarding COVID-19, can contribute to hostile activities, such as those originating from Russia (Lucas, Morris, Rebegea 2021). The spread of false information by a hostile nation is intended to diminish the public's capacity to react to crises and is regarded as an aspect of contemporary warfare (Guge 2020; Horowitz 2019). Therefore, educating individuals in critical skills to combat disinformation holds a national security implication, particularly given the ongoing conflict in Ukraine, a neighboring territory of Poland. It wasn't until the pandemic that links between numerous individuals disseminating COVID-19 misinformation and Russian authorities were revealed, resulting in arrests in Poland (Mierzyńska 2024).

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LIMITATIONS OF PRESENTED INITIATIVES

Many of the initiatives and projects described lack comprehensiveness. They often offer general guidelines or pilot activities, without fully providing ready-made tools and universal solutions. Additional problems can be barriers, restriction to a specific region or one target group, and lack of updated materials. On the other hand, the variety of projects provides an opportunity to select those most suited to the needs of a particular school, university, or organization. The advantages and disadvantages of the selected projects are summarized in Table 2.

Table 2. The advantages and disadvantages of the selected projects

No.	Project	Description of activities	Project advantages	Project disadvantages
1.	Borkowska and Karelus (2022) https://it-szkola.edu.pl/publikacje,plik,85	a publication offering practical guidance on how to incorporate the topic of fake news into lessons in Polish schools	– Polish-language material – specifically addresses fake news in a school context – practical tips	– focuses on selected issues – rather limited to the Polish educational context
2.	Center for Civic Education (2022) https://sus.ceo.org.pl/wp-content/uploads/sites/4/2022/07/Prawda-czy-falsz-scenariusz-lekcji.pdf	a lesson scenario and exercises for students on detecting fake news; ready to use	– adapted to the Polish core curriculum – specific exercises and examples – free PDF	– limited thematic scope – single format material (lesson scenario in PDF)
3.	Demagog (2020) https://akademia.demagog.org.pl	a Polish educational platform teaching how to verify information and detect manipulations (Fact-Checking Academy)	– focuses on the Polish context – interactive courses and materials – renowned fact-checking organization	– may require registration – limited number of topics (compared to global resources)
4.	Demagog (2021) https://demagog.org.pl/analizy_i_raporty/fajnie-ze-wiesz	an educational app that shows how to spot fake news; provides practical examples and tasks	– mobile app (easy to use) – materials in Polish – concrete practice in identifying disinformation	– requires a mobile device – limited support for other languages

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No.	Project	Description of activities	Project advantages	Project disadvantages
5.	Erasmus+ (2023) https://erasmus-plus.ec.europa.eu/projects/search/details/2022-1-FR01-KA-220-HED-000088804	an international project aimed at developing critical thinking skills and digital competencies against disinformation	– international partnerships – support for higher education – joint initiatives of universities from different countries	– mainly targeted at university students – project under development (subject to changes)
6.	Information Society Development Foundation (2018) https://frsi.org.pl/klik-nij-sprawdz-zrozum-jak-swiadomie-korzystac-z-informacji	a campaign and educational resources on using information on the internet responsibly	– Polish initiative – simple advice and instructions – promotes mindful internet use	– rather general materials – focus primarily on basic aspects
7.	School with Class Foundation (2017) https://www.szkolazklasa.org.pl/materialy/radzic-fake-news	a guide for teachers and students on identifying and combating fake news at school	– focused on Polish schools – specific guidelines – backed by the foundation's experience	– quite a general approach to the problem – lacks an extensive additional materials base
8.	Ministry of Digital Affairs and NASK (2023) https://www.gov.pl/web/baza-wiedzy/materialy-do-cyberlekcji	official government educational materials on internet safety and counteracting fake news	– materials in Polish – available for free – aligned with Polish school realities	– potentially limited to basic-level content – relatively few interactive tools
9.	Nicolaus Copernicus University in Toruń (2022) https://portal.umk.pl/pl/article/studenci-w-walce-z-dezinformacja	a project/action with UMK students, offering workshops and informational campaigns about fake news	– academic community involvement – building social awareness – developing practical fact-checking skills	– limited to one university (local scale) – no information on possible follow-up
10.	Nowak and Matusevic (2020) https://ikm.gda.pl/wp-content/uploads/2020/05/DIME_fakenews.pdf	a collection of lesson scenarios (14+) on identifying false content online and critical information analysis	– specific exercises and tasks – free PDF – focus on teenage audience	– limited number of scenarios – requires adjustment to current examples

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No.	Project	Description of activities	Project advantages	Project disadvantages
11.	SWPS University (2022) https://swps.pl/my-uniwersytet/aktualnosci/aktualnosci/31813-srodkowoeuropejskie-obserwatorium-mediow-cyfrowych-cedmo-rozpoczyna-prace-uniwersytet-swps-koordynuje-jego-dzialania-w-polsce	a research and educational initiative monitoring digital media and countering disinformation in Central Europe	– international scope – combines academic research and education – coordinated by a recognized university	– primarily focused on the Central European region – ongoing project (not all results available)
12.	SWPS University (2023) https://swps.pl/my-uniwersytet/aktualnosci/aktualnosci/33394-detektor-konkurs-fact-checkingowy-dla-studentow-i-studentek	an academic competition promoting the creation of innovative fact-checking solutions among students	– develops practical skills – encourages innovation and collaboration – fosters creative thinking	– mainly intended for students (narrow group) – one-time event (depending on the contest schedule)

Source: own elaboration.

LIMITATIONS OF THE STUDY

The article primarily focused on the Polish context, which may not fully capture the challenges and initiatives in other countries. Cultural differences can profoundly influence how fake news and disinformation are perceived and addressed. There was a notable lack of data regarding the effectiveness of the initiatives mentioned in the paper. While the article highlights the integration of media education into schools and universities, it does not thoroughly explore the practical challenges educators face in implementing these programs or their outcomes in terms of student learning and behavior. We intentionally avoided an in-depth exploration of the broader sociopolitical dynamics contributing to the spread and impact of disinformation, but factors such as polarization and political agendas could play a significant role.

FURTHER DIRECTIONS AND RECOMMENDATIONS FOR THE POLISH EDUCATION SYSTEM

Research shows that a focused and structured approach to media education is more effective than fragmenting it across various subjects. Dedicated media literacy courses significantly enhance critical thinking and information competencies compared to traditional methods (Geraee, Kaveh, Shojaeizadeh, Tabatabaee

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2015). Simulations, such as exercises where students create and detect fake news, develop critical skills for identifying disinformation. Engaging teaching methods, including simulations, improve the effectiveness of media literacy education and reduce susceptibility to misinformation (Traberg, Roozenbeek, Linden 2024). AI-based tools can be effectively used to analyze and classify content, supporting critical thinking development. AI-powered applications that aid in recognizing fake news showcase their potential for formal education (Olszowski 2023).

Teacher training is crucial for equipping educators with the skills to address disinformation effectively. Teacher workshops significantly enhance their ability to deliver media literacy education, leading to improved outcomes for students (Scull, Kupersmidt 2011). Media education at the university level should extend beyond journalism to include fields like public health, economics, and IT. Interdisciplinary approaches significantly improve students' critical thinking skills in evaluating media content (Lim, Tan, Voo, Lee, Teng 2024).

Finland's example, where media literacy starts in preschool, underscores its effectiveness. Introducing media education early fosters long-term critical thinking abilities, making it a foundational skill (Rantala 2013). Digital educational resources, such as centralized portals, are valuable tools for teachers and students. Accessible and interactive digital platforms enhance learning and engagement with media literacy topics. Projects like Erasmus+ facilitate knowledge transfer and best practices among countries. International collaboration in media literacy education builds systemic resilience against disinformation (European Commission 2024).

CONCLUSION

Issues of disinformation and fake news are incorporated into the core curriculum for elementary and high school, predominantly in Polish and computer science classes. While this approach enhances the flexibility of teaching, it may present challenges in terms of coherence. Teachers play a crucial role in explaining definitions, providing examples, and teaching students how to interpret and assess information credibility. Abundant online resources and lesson scenarios are available for both teachers and students to ensure engaging learning experiences. Furthermore, there are noteworthy multidisciplinary initiatives at universities, primarily catering to journalism and related fields. Given the broad relevance of fake news and disinformation across various domains, such as health, politics, and economics, it is essential to expand these educational programs to students from diverse academic backgrounds.

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