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BOBCATSSS 2020 PARIS

INFORMATION MANAGEMENT FAKE NEWS AND DISINFORMATION

Proceedings book

Université Gustave Eiffel
INSTITUT FRANCILIEN D'INGÉNIERIE DES SERVICES
BOBCATSSS 2020 PARIS
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INFORMATION MANAGEMENT
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Content

Preface

BOBCATSSS 2020 was co-organized jointly by the Institut Francilien d'Ingénierie des Services (IFIS), Gustave Eiffel University (former Université Paris-Est Marne-la-Vallée), and University of Library Studies and Information Technologies (ULSIT), Sofia, Bulgaria.

BOBCATSSS is an annual international symposium that addresses hot topics for librarians and information professionals in a fast-changing environment. It is created by and for students, teachers, researchers and professionals in the information field. BOBCATSSS is held under the auspices of BOBCATSSS Association (https://bobcatsss.info/). It is a tradition that has been passed on from one European country to another since 1993, providing a rich professional conference and working seminar program, accompanied by numerous opportunities for networking, personal exchanges, discussions, and learning.

The main theme of BOBCATSSS 2020 was "Information Management, Fake News and Disinformation". This book consists of a total of 33 contributions distributed between paper and best practices that address many different issues.

Editors are grateful to many organizations for their support and especially Gustave Eiffel University and University of Library Studies and Information Technologies (ULSIT) and BOBCATSSS Association.

We would also like to thank the students for their involvement in the organization of the conference.

We would like to take this opportunity to thank conference keynote speakers Matilde FONTANIN, University "La Sapienza", Rome & University of Trieste and Vincent NOZICK, Gustave Eiffel University, France as well as our invited speaker Rose-Marie FARINELLA a French schoolteacher. Last but not least, we would like to thanks; the authors and presenters of papers, best practices, Pecha Kucha, posters, workshops.

Our last thanks go to the 216 participants from 21 countries Bulgaria, Canada, Croatia, Danemark, Finland, France, Germany, Hungary, Italy, Japan, Latvia, Netherlands, Nigeria, Norway, Poland, Portugal, Russia, Spain, Sweden, Turkey and the USA.

Organization

BOBCATSSS is an annual symposium organized by students for students in Library and Information Science. The symposium was first held in Budapest (Hungary) in 1993 and in 2022 it will celebrate its thirteen anniversaries.

The name comes from an acronym from the first letters of the nine cities of the universities that initiated the BOBCATSSS symposium in 1993: **B**udapest, **O**slo, **B**arcelona, **C**openhagen, **A**msterdam, **T**ampere, **S**tuttgart, **S**zombathely and **S**heffield.

BOBCATSSS is under the auspices of **Bobcatsss Association** (former EUCLID) and tries to bring a dialogue between information specialists, employees of information and library departments, teachers and researchers in information and library sciences and tomorrow's professionals. Each year the symposium tackles subjects related to information science.

BOBCATSSS 2020 has been organized jointly by Gustave Eiffel University (Paris – France) as a host and the University of Library Studies and Information Technologies (ULSIT) (Sofia – Bulgaria) as a partner.

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Academic Honesty in Humanities in Latvia: Reporting Mistakes of Academic Publications

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Abstract. Academic integrity and honesty have been breached not only by students in the learning process, but also by researchers in academic publishing. Not reporting mistakes of academic publications is misconduct. The research aim is to research mistake reporting rates in the Humanities field in Latvia, prescribing common mistakes and possible reasons for not reporting mistakes. The leading researchers of Humanities have been surveyed. The mistake occurrence in the researcher publications between researchers' publications and other researcher publications are compared. Seventy percent of researchers report mistakes pointing out that "colleagues", "no time" and "there is no point" are the main reasons for not reporting the mistakes. The research concludes that 1/3 of all publications are with mistakes in Humanities in Latvia. Researchers are more emotionally attached to their publications and strongly reacting (disappointment, anger) to typographical errors. Academic honesty is partially respected.

Keywords: academic publication; academic honesty; academic integrity; mistakes; mistake reporting; Humanities

1 Introduction

In modern-day society, fake news can be determined as "something that is not genuine, having been counterfeited, usually with intent to deceive or defraud" (Reitz, 2014) or a subjective thought written down without references and shared to people for them to decide if it is true or not (Rochlin, 2017). In the academic world, all academic publications should be neutral and objective, based on evidence and research data. Recent publications (Haven, Tijdink, Martinson, & Bouter, 2019; Stroebe, Postmes, & Spears, 2012; Kornfeld, 2012; Molckovsky, Vickers, & Tang, 2011) show otherwise that researchers make mistakes: some of the researchers' fake results or data, or copy the results, other use inappropriate methodology or incomplete data. It all results in a breach of academic integrity and academic honesty.

Academic misconduct and dishonesty are widely researched problems in the academic world (Stone, Jawahar, Kisamore, 2009). Numbers of studies have been done to research student behaviour and plagiarism in the academic paper writing process (Nazir, Aslam, 2010; Chapman, Lupton, 2004) as well as studies about academic honesty and integrity of researchers. Academic integrity called also research integrity is an international statement, which consists of six principles: honesty, trust, fairness, respect, responsibility, and courage. Academic honesty is one of these principles and states that "Honesty is an indispensable foundation of teaching, learning,

research, and service, and a necessary prerequisite for the full realization of trust, fairness, respect, and responsibility" (International Center for Academic Integrity, 2012). Different perceptions of academic integrity do not help to diminish the misconduct between academic ranks and disciplinary fields (Haven, et al., 2019; Kwong, Ng, Mark, & Wong, 2010).

Mistakes in publications may occur in diverse forms: typographical errors, transposition, author errors, reference errors, outcome errors, etc. (Molckovsky, et al., 2011). Some of them could be called "honest" errors (typographical), other misconduct (plagiarism) (Stoye, 2019). They must be reported to responsible parties, because mistakes "honest" or misconduct can create serious consequences. For example, in medicine, mistake can cost a life (Molckovsky, et al., 2011), in Humanities it can change and damage the perception of the identity of a person, community and country itself. Research shows that Humanities are the lowest-ranked science field in academic integrity compared to biomedicine, natural sciences and social sciences (second-lowest score) (Haven, et al., 2019). The low score could be explained by Humanities coverage in databases as the books and monographs (main publication area) are not indexed (Aksnes, & Sivertsen, 2019). Academic integrity in Latvia has been researched in social sciences (Tupuriņš, 2018), but not in Humanities. However, the problems could be similar due to the request for reliable text.

The study aims to determine does leading researchers report found mistakes in academic publications of their colleagues (other researcher articles - ORA) and their own mistakes (researchers articles - RA) in Humanities in Latvia; which are the most common noticed mistakes in Humanities, and what reasons effect researchers to not report mistakes in University of Latvia, Institute of Literature, Folklore and Art of Institute of Latvia and University of Daugavpils. This is the first study that assesses the academic integrity and honesty in Humanities in Latvia. Assessing researcher academic integrity in mistake reporting of academic publications will provide insight into what factors hinder mistake reporting and academic honesty.

It is hypothesized that researchers in humanities in Latvia more often let pass the typographical errors than structural ones, and are more biased to their publications, than others in the field.

2 Methodology

2.1 Ethical considerations

The study gives one-sided insight into the academic integrity of the Humanities of Latvia but does not apply findings to the complete field of Humanities in Latvia, nor to average researcher characteristics. The study generalizes obtained data and indicates mistake reporting directions and leading tendencies.

2.2 Participant selection and data obtaining

Humanities field in Latvia includes disciplines like history and archaeology, linguistics and literary studies, philosophy, ethics and religion, music and visual arts in Latvia (Ministru kabinets, 2018).

Scientific institutional review concludes that the greatest part of researchers in Humanities in Latvia is represented by two universities (the University of Latvia and the University of Daugavpils), and one institute (Institute of Literature, Folklore and Art of the University of Latvia) (Technopolis Group, 2014). Therefore, academic personnel of these institutions was picked for research as the leading researchers in Humanities in Latvia. Chosen institutions represent all of the disciplines of the Humanities field.

Researcher email addresses were obtained manually from institutional websites. An electronic survey was distributed in November 2019 via email among all academic researchers. Researchers were eligible to participate if they were academic stuff of institutions and had written at least one research study in Humanities in Latvia or abroad. The online survey was based on a survey in the study "Characterization of published errors in high-impact oncology journals" (Molckovsky, et al., 2011) which typology of mistakes was used and modified in this study:

- "Simple typographical errors – spelling, grammar, abbreviations, mislabeling;
- Outcome error - results were changed as a result of an error in methodology, or results from other studies were misquoted or misinterpreted;
- Reference error - incorrect citation;
- Author error - author spelling, the order of authors, affiliations of authors, author disclosures;
- Transposition - a more serious typographical error in which data or labels were correct but switched between 2 groups" (Molckovsky, et al., 2011, p. 27).
- Changed and added error types:
- Data error – from dosage errors – incorrectly rounded and used, counterfeited, or omitted data;
- Repetitions – sentence or paragraph repetition in publication.

Google forms tool was used to create the survey and retrieve the data. Researchers received an information email explaining the purpose and goal of the study. The email included a link to the survey. The survey started with a short introduction to the purpose and goal of the survey, instructions and timing issues and anonymity insurance statement. The survey was sent twice to ensure the quantity of responses of researchers. As the survey was anonymous, it was not possible to send reminders to researchers who did not contribute their answers to the survey.

To verify the answers and get information that is more detailed in the mistake reporting issues two interviews were held with editors of the academic journal "Letonica." "Letonica" is a leading academic journal in the Humanities field in Latvia. Email addresses from six previous and current editors were obtained in the Institute of Literature, Folklore and Art of the University of Latvia. Two of the current editors agreed to take part in the interview.

2.3 Methods

The survey consisted of four thematic parts: demographic data (6Q), mistakes in academic publications in humanities (general) (6Q), mistakes in other researcher publications in

Humanities in Latvia (4Q) and mistakes in the researcher's papers in humanities (10Q). In the survey open questions were used, one and multiple answer questions, and scale questions in a total of 26 questions.

Results were calculated by taking the average of all valid non-missing items in that question, except open questions. All questions for researchers in the survey are obligatory. Each question is interpreted based on its type and thematic similarity: mistake types and occurrence in humanities; reasons for not reporting the mistakes. For data analysis, SPSS 22 program was used – crosstabulation and frequency functions.

From two structured interviews of 22 questions, one interview was verbal, the second one was written interview. The interview includes questions about editors and peer reviewers' work, mistakes and errors in academic publications of the academic journal "Letonica" from the perspective of the editor and the process of mistake correction in an academic journal.

3 Results

Three hundred nine email addresses were collected from researchers in Humanities in Latvia. The survey was sent to 309 researchers (sample size 100%). Two email addresses were not reachable (99%). Thirty researchers submitted their answers (9,8%). Low answering range might be a result of different reasons which include lack of time (the survey is too long), and/or complicity (hard to answer), authors' status (the author is a student), lack of interest in the topic, poor "computer" skills. One of the reasons to consider is that the Humanities field in Latvia is very small, and researchers mostly know each other. This in combination with high average age and rather poor knowledge of new technologies could cause such personal feelings as fear to become disclosed.

Verbal interview of editor took 26 minutes and written interview 3 pages written text. Both editors filled out the survey as well.

The average age of researchers is 48 years (youngest 25, oldest 77) with an average number of publications per researcher – 58,6 (highest 400 publications). The average seniority age is 21,3 in the Humanities field. Most represented disciplines are Folkloristics, Literary Science, Linguistics, and History. Genders were represented by 70% of females and 30% males. Most respondents were from the Institute of Literature, Folklore and Art of the University of Latvia.

3.1 Mistake occurrence in Humanities in Latvia

Survey results show that researchers find mistakes and report them, although not everyone. If mistakes occur in ORA and are noticed by the researcher, 70% of researchers report mistakes further to someone. If mistakes are found in RA, then 56,7% of researchers report their mistakes further, and 16,7% do not report but tries to correct their mistakes (outcome, data mistakes) in the next research paper. In each case, some part of mistakes is not reported.

Table 1 represents common errors and fewer noticed errors by researchers in foreign publications in humanities, local level publications in humanities (Latvia), and errors in their publications (Researcher). The highest the percentage the more mistakes (or fewer mistakes)

are being noticed in each category. Common error percentages are based on the sum of answers – often noticed errors and too often noticed errors; less common errors in the sum of never noticed and rarely noticed errors.

Fewer errors are noticed in foreign publications which can be explained by higher publication standards in journals and language gaps. Researchers even less notice errors in RA, except typographical errors. In Latvia, fewer noticed errors are transpositions (40%) and data (23,3%) errors. In comparison, errors are more noticed in ORA than in RA (Figure 1).

Table 1. Common and less common errors in humanities, %

	Common errors, %			Less common errors, %		
	Foreign	Latvia	RA	Foreign	Latvia	RA
Simple typographical errors	10	33,3	30	10	0	0
Outcome error	0	6,7	3,3	16,7	13,3	36,7
Reference error	6,7	23,4	13,3	6,7	3,3	13,3
Author error	3,3	6,7	10	16,7	16,7	40
Data error	0	0	0	20	23,3	50
Transposition	0	3,3	0	26,7	40	33,3
Repetitions	3,3	16,7	6,7	20	6,7	33,3
Average	3,32	12,87	9,04	16,69	14,76	29,51

The most common mistake type in Latvia is typographical errors – 33,3% of researchers find these mistakes often or too often in academic papers. If 58,1 papers are published in the researcher's career (21,3 years), then 19,4 papers are with typographical errors, which is 1/3 of all papers. The second most common error type in Latvia is a reference error which means that 23,4% of papers give incorrect references to citations or ideas. "References are not checked before publishing the journal "Letonica" – confesses the editors – "because it takes too much time" (interview). 16,7% of researchers find repetitions in papers.

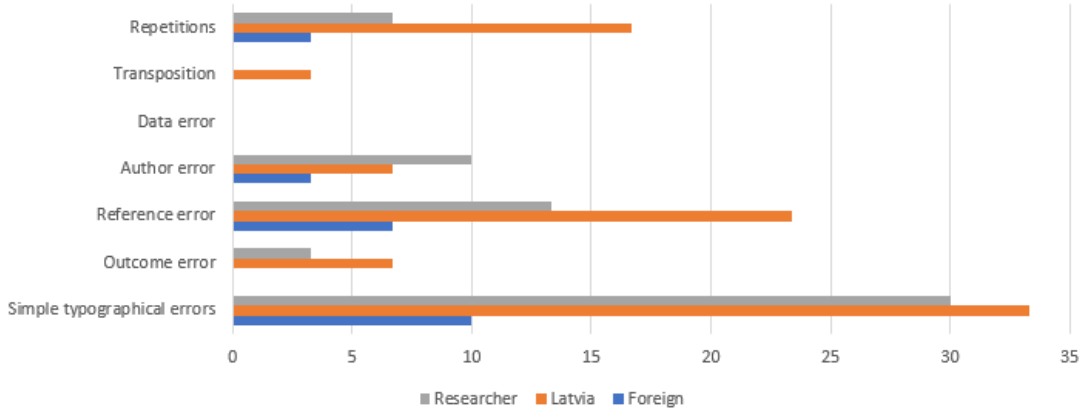

Fig. 1. Common errors in humanities, %

Figure 1 visualizes error notice by seniority in Humanities in Latvia. The assumption that the longer you are researchers the easier it will be to find the errors in ORA is false. The highest

possibility to find errors is in a period of 10 to 29 years of being a researcher in the field. It is necessary to take into consideration that 66,6% of all answers come from these two seniority groups, making the rankings slightly higher. A low percentage rate from 30 to 49 seniority groups could be explained by the idea that errors do not have an influence on the understanding of the paper or presented results because researchers have gained enough experience and automatically correct errors in their minds.

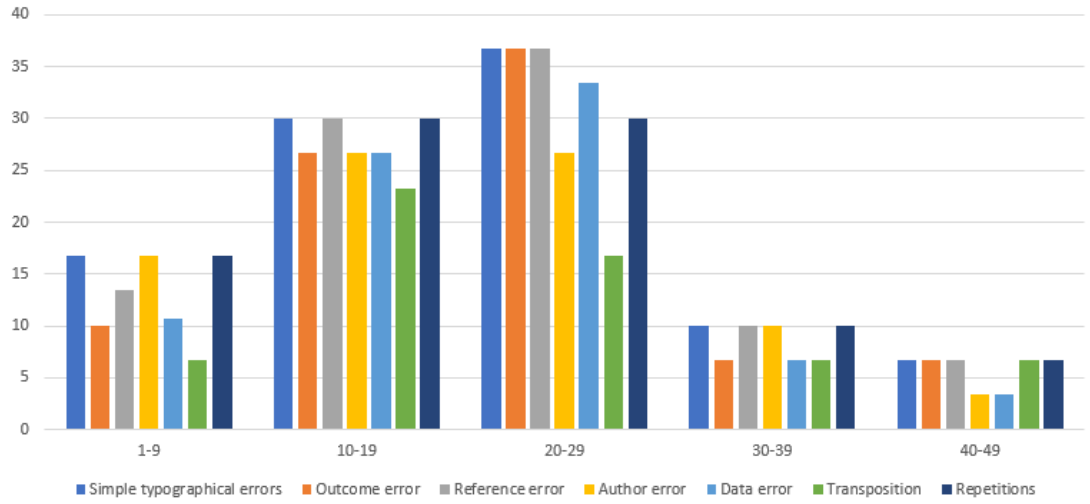

Fig. 2. Error perception chart after seniority in Latvia, %

In all seniority levels typographical, reference errors and repetitions are noticed more often, leaving outcome and data errors in second place. The contrary to Figure 1 data error reappears in Figure 2 and has been noticed by every seniority level which means that on average it is not seen often or never, but just enough (probable data analysis error creating cross tabulations has occurred in this paper).

3.2 Reasons for not reporting the mistakes

Although 70% of all researchers report errors, some do not. Figure 3 represents emotions that errors cause when they are noticed. The stronger the emotions the highest the chance that the errors will be reported to other parties. Researchers are more indifferent to ORA errors than to RA. Disappointment and anger are the two main emotion researchers experience. RA errors cause sorrow, surprise and emotion mix. ORA errors are more fun, especially typographical and author errors (Table 2). It is quite easy to make typographical errors in the Latvian language, thus creating new words that explain the fun part of errors.

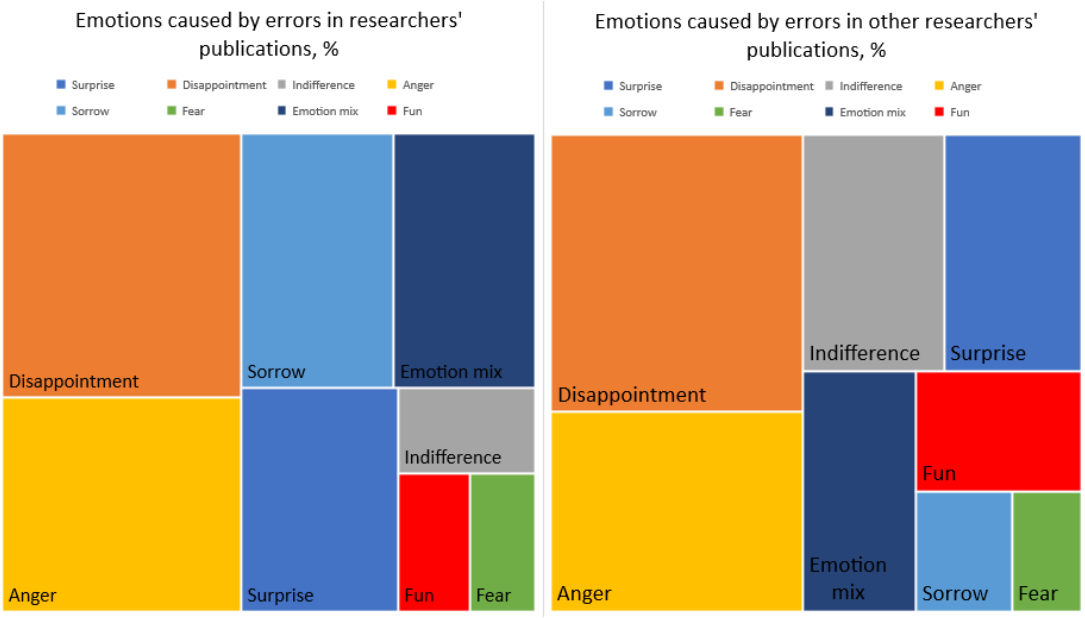

Fig. 3. Tree chart of emotions caused by errors in other researchers and researchers own publications, %

The highest level of anger is created by typographical errors in RA (56,7%), then in ORA (16,7%). The most disappointment researchers are with reference errors in ORA and data error, but the difference between ORA and the RA is not too significant in this research. Researchers are always surprised about all errors, especially typographical and repetitions. Emotion mix can be observed more in RA than in others. Emotion mix is created by outcome (26,7), author errors (23,2) and transpositions (33,3). Researchers experience more emotions about errors in RA, then about ORA.

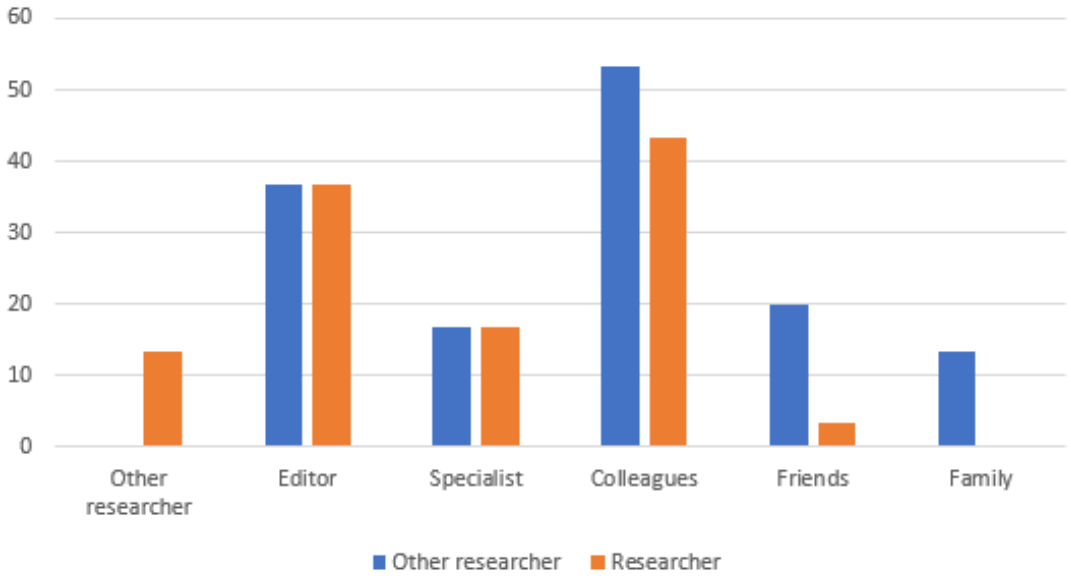

Fig. 4. Diagram of reporting errors to others, %

Table 2. Emotions caused by errors in other researchers and researchers own publications, %

Emotions caused by errors in RA, %								
	Surprise	Disappointment	Indifference	Anger	Sorrow	Fear	Emotion mix	Fun
Simple typographical errors	23,3	30	3,3	56,7	26,7	0	13,3	10
Outcome error	20	33,3	6,7	13,3	16,7	6,7	26,7	3,3
Reference error	16,7	36,7	6,7	20	23,3	6,7	10	3,3
Author error	13,3	36,7	6,7	23,3	16,7	3,3	23,3	6,7
Data error	20	36,7	6,7	33,3	23,3	10	13,3	3,3
Transposition	13,3	33,3	10	13,3	16,7	3,3	33,3	6,7
Repetitions	23,3	26,7	3,3	30	20	3,3	13,3	3,3
Average	18,56	33,34	6,2	27,13	20,49	4,75	19,03	5,2
Emotions caused by errors in ORA, %								
	Surprise	Disappointment	Indifference	Anger	Sorrow	Fear	Emotion mix	Fun
Simple typographical errors	26,7	26,7	26,7	16,7	6,7	3,3	20	20
Outcome error	16,7	30	10	23,3	3,3	0	13,3	3,3
Reference error	6,7	43,3	10	26,7	3,3	6,7	6,7	3,3
Author error	13,3	33,3	10	20	10	0	10	13,3
Data error	16,7	40	10	30	6,7	6,7	16,7	6,7
Transposition	13,3	20	26,7	13,3	3,3	6,7	13,3	6,7
Repetitions	10	30	13,3	30	3,3	3,3	6,7	10
Average	14,77	31,9	15,24	22,86	5,22	3,81	12,39	9,04

Researchers report errors mostly to colleagues (ORA – 53,3%; RA – 43,3%), only then to editors of the publication (36,7%) (Figure 4). Twenty percent reports ORA errors to friends, but RA errors only 3,3%, similarly to the family. Only 13,3% of researchers report about errors to another author of the publication. Field specialists are involved in the error reporting process (16,7%) as much as the family and friends are.

On average researchers are more influenced not to report mistakes when errors of ORA must be reported (Figure 5). The main reasons not to report mistakes are lack of time, colleagues, and absence of motivation. 36,7% of researchers think that there is no reason reporting mistakes of ORA, 13,3% of RA. More than 23,3% of researchers are not affected by any kind of reason not to report mistakes, although more than 21,3% of researchers disagree, because reasons do affect. Only lack of time and “there is no point,” prevents mistake reporting of RA.

Fig. 5. Reasons that influence error reporting, %.

4 Discussion and conclusion

It was hypothesized that researchers more often let pass the typographical errors than structural ones, and are more biased to RA, than others in the field, by determining if leading researchers report found mistakes in academic publications of their colleagues and their own mistakes in Humanities in Latvia; which are the most common mistakes, and what reasons effect researchers to report or not to report mistakes.

Research "Characterization of published errors in high-impact oncology journals" concluded that "more than half the respondents (59%) had noticed errors in articles, but only 13% of those that noticed errors reported those errors to the journal" (Molckovsky, et al., 2011, p. 29). Eighty-three percent of researchers had noticed errors in articles in humanities, which suggests that there might be more errors in articles or researchers are less indifferent to errors in Humanities, which is confirmed by the emotional involvement – the stronger are the caused emotion, the motivated researcher can be to report the mistake (Scarantino, 2014).

Although stronger emotions are more characteristic of RA, the reporting percentage is smaller (56,7%) than to ORA (70%). In comparison to medical specialists, 63,35% of researchers in humanities report mistakes to someone, of those 36,7% reports to journals. Journal "Letonica" editors have noticed reference errors after publication has been made, but no one has ever reported mistakes to them about this error or others. The differences between seniority levels can be indicated in mistake notice and reporting. Researchers from 10 to 29 seniority years tend to find mistakes more often than 30 to 49 years of seniority – that can be explained by the need to publish articles, thus reading more related articles and noticing more mistakes in humanities (Haven, et al., 2019).

Comparatively to Medicine articles, Humanities have more mistakes in typography (1/3 of all articles) and references which are the main mistakes, as those are easier to notice. The strongest emotions are caused by typographical errors, thus concluding that hypothesis first part has been disproved – researchers do not let pass typographical errors more often than structural ones. References are important to argue RA ideas, but reference errors prohibit other researchers to verify written information and find sources, thus becoming misleading.

As the results show that a lot of mistakes can be found in ORA, that means that in RA stage researchers are more careless to their texts, which approves the second half of the hypothesis – researchers are more biased to RA, then to ORA. The difference in data is not large and does not represent all researchers. Mistake reporting shows that ORA mistakes are reported more often, then RA mistakes. About ORA researchers tell friends and family, but more rarely explain mistakes that occur in RA. That could be explained by disappointment in one's skills and researcher abilities.

Junior researchers (first 10 years in the field) should be taught about academic integrity and what it includes. Low mistake noticing range is the result of senior researchers not showing the "ropes." Similarly concluded Haven et al., that policies of academic integrity and rules of academic writing are more accessible to senior researchers than to junior researchers (Haven et al., 2019). It also influences the research process in which junior researchers might not be equal and thus their research insignificant.

"Colleagues," "lack of time" and "there is no point" – answers are given by researchers as reasons not reporting mistakes. Two objectives can be seen when colleagues are involved in mistake reporting: firstly, by speaking up to colleagues about mistakes the immediate need to report being satisfied thus reporting mistakes to the author or editor of the publication does not seem as important; secondly, colleagues tend to discourage researchers because they do not believe that the mistake reporting will do any good or change the situation. As well we need to take into consideration that reporting mistake to a colleague can be used as an indirect message to the author due to the very small field of Humanities in Latvia. No time is understandable for researchers who are actively publishing their research – mistakes are noticed, but when comes more free time to report the mistakes, researchers have forgotten about them.

Without manual error searching in Humanities field journals, it is impossible to determine if mistake quantity is true. The percentage of mistakes relies on the researcher's ability to notice mistakes and his experience in the field, thus is not reliable enough to characterize Humanities fields error range. Peer reviewing process provides a safety net for mistake correction – as far as to retract articles from publication possibility if the mistakes are not corrected by the author or there are ethical considerations to retract the article.

"When a society's educational institutions are infused with integrity, they help create stronger civic culture for society as a whole" (International Center for Academic Integrity, 2012). Misconduct or a simple academic honesty breach can diminish the efforts of humanities to create a stronger society, disrupting the creation of national identity. Academic publications in journals are the way how researchers do their research results available to other researchers and the public in general. Only the experts on a given theme can truly cover the research field

and find mistakes in the content of publications, and it is their responsibility to report any kind of found mistakes in any science field there is as the academic integrity states it.

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Analysis of the fake news as an instrument of political propaganda and social promotion

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Abstract. We can say that the meaning of fake news is a false story that looks like new. Frequently they are made and spread with some purpose. Using the available technologies, the fake news maker creates these stories make then the appearance of a truthful fact. The information manager has the challenge to manage and analyze the information and the effects fake news has in its environment. We present the analysis that we have made about fake news. This fake news was made as an instrument of political propaganda and social promotion in the society of northern Spain, using the media that they had. However, got the fake news its purpose? What role did the information unit have in this story? The methodology that we use is the study of information management about the fake news made by information units and the effect that the fake news had. Ending we can say that the information manager really can be the gatekeepers of trustworthy information.

***Keywords*:** archives; fake documents; information manager; northern Spain

1 Introduction

A false story that appears to be news, plausible news.

To study this phenomenon, we must analyze some aspects, part of them inherent to fake news but other tangential. They are the intentionality, the purpose, the media used, the effect it has caused and the role that the information manager could have. To these characteristics, we must add the elaboration of the fake, which is the story with false data or the misrepresentation of other true.

It seems contradictory that nowadays, in a society that we call “information and knowledge” is the moment in which the fake news has the most boom, to the point of affecting the stability of governments (even their formation) or being analyzed by professionals´ meetings as Bobcatsss. It is evident that the development of the last decades in Information and Communication Technologies has greatly influenced, assuming a real highway for the diffusion of these ”news,” so maybe we must talk about propagation instead of diffusion. In this environment, the crop field that ICTs suppose could be called Disinformation and Communications Technologies.

However, this boom, we are aware that fake news is not a phenomenon born as a result of the development of technologies. They are only the grown path. Since ancient times, these false stories covered with plausibility have been used to achieve certain aims. The technologies used in the past were those that were known and available in this moment. Manipulating the opinion that society has about a fact has developed persecutions, sustained totalitarian regimes, and laid down political campaigns.

2 Context

In this paper we show an example of a fake news that it was used as a social ascent. We analyze the points we have mentioned at the beginning. The monastery of Santa María de Otero is a female Cistercian abbey. It was in the village of Otero de las Dueñas, about 30 kilometers northwest of León. It was founded by María Núñez, a nobility woman, in 1240. The written culture of Cistercian monasteries is an objective of Lemacist[1].

It disappeared at the end of the 19th century. All documents from Modern and Middle Ages show us this monastery as a daughter of Santa María de Gradefes[2], and it has been accepted by the historiographical community [1].

Nevertheless, as we will see, this tradition and this documentation are the product of fake news, carefully and intentionally crafted, for a specific purpose and using the available media that planners had.

María Núñez was from Flaínez Family [2]. This family had already founded other monasteries[3], and María in 1230 donated her properties to the Order of Cistercians (ordini cisterciensi) represented by the abbot of Sandoval, the abbot of La Espina, and the abbess of Carrizo. These properties were in two different areas, the Porma riverside and the Luna riverside. This donation maybe was made to save her soul, or maybe to found a monastery [1].

However, a short time later, María Núñez regretted her donation, and she got back her heritage for her, not deiure[4], but did it de facto, and she bought new lands that they will be for a new monastery, Otero. In 1234, the Abbot of Sandoval started a trial against María Nuñez about the heritage [1].

Here is the story.

2.1 The Fake

We have told you that the history of Otero´s foundation was accepted by the historiographical community. But there is a problem: the original 13th-century document on the founding of Otero doesn´t exist.

We have three translations of the text from 1240. Two of them made by notaries in 1450 and 1631, and another one from the 18th century[5]. The copy from 1450 is the key, on 9 November it was written by the notary Pero Alfonso in a parchment. Lope Núñez de Guzmán, the nun´s attorney, applied for it.

[1] ProyectoI+D from Programa Estatal de fomento de la investigación científica y técnica de excelencia, subprograma de generación del conocimiento, titled "Libros, memoria y archivos: cultura escrita en los monasteries cistercienses del noroeste peninsular (siglos XIIXIII): LEMACIST", Ref. HAR2013-40410-P. Proyecto de I+D financed by Agencia Estatal de Investigación y el Fondo Europeo de Desarrollo Regional (FEDER) en el marco del programa estatal de fomento de la investigación científica y técnica de excelencia, subprogram estatal de generación de conocimiento (2017), Ministerio de Ciencia, Innovación y Universidades, titled "Libros, memoria y archivos: cultura escrita en monasteries cistercienses (siglos XII-XIII), LEMACIST (II)", Ref. HAR2017-82099-P. Directed by Dr. Ana Suárez González Teacher of Universidad de Santiago de Compostela.

[2] Cistercian legislation mandates that the foundation of a monastery be made as a subsidiary of anexistingone.

[3] Her mother and her grand mother had founded two monasteries [1]

[4] The heritage had been taken by the abbots of Sandoval and La Espina

[5] Archivo Histórico Diocesano de León (AHDL), Fondo Otero, docs. 778, 758 and 472. These documents have been studied and edited by José Antonio Fernández Flórez and Marta Herrero de la Fuente [3]

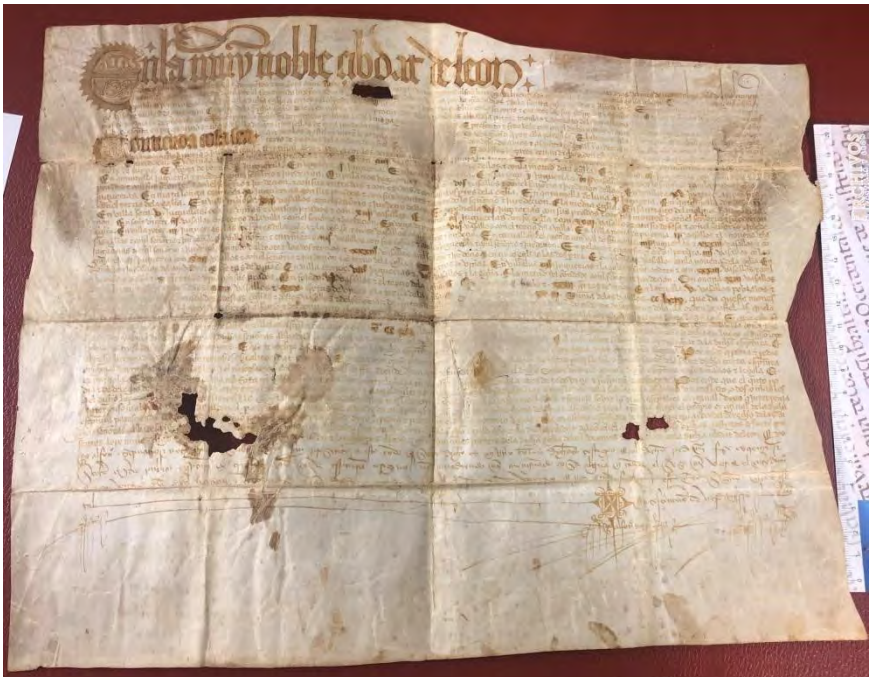

Fig. 1. AHDL, Fondo Otero, doc. 758. Parchment with the copy from 1450. Photo by Mª del Carmen Rodríguez López and Rafael Ceballos Roa.

In the copy, the notary says that he is watching a chirography with four pending seals[6]. Through diplomatic and philological studies, we can assert that this document is false.

The first evidence of this fake is in the beginning, in the *protocollum*.

> *"…doña María Núñez de Guzmán Condessa do a Dios e a Santa María e a la horden de Zistel Santa María de Otero para facer su monasterio de dueñas de la horden de Cistel e de estos lugares e de cuan dichos estos vassallos e con estas heredades e con el señorío mero e mixto imperio e juredicion ceuil e criminal…"*[7]

The intitulatio says María Núñez de Guzmán, but the foundress was not from Guzmán family. And in any of the original documents she was called "condesa" (countess). In addition, neither the sentence "mero e misto imperio" nor the word "juguerías" were used in these times or in this area. Finally, the data has given by Anno Domini, and in the 12th century they gave it by era hispánica[8].

[6] "…Pareçió Lope Núñez de Guzmán canónigo de la dicha eglesia de León en nombre e como procurador de las señoras abbadessa priora monjas el conbento del monasterio de santa maría de Otero…" "… e presentó e fiço leher por mi el dicho notario a el dicho Vicario vna escriptura repartida por A. B. C. escripta en pergamino de cuero e senada con quatro sellos de cera pendientes en cuerdas de seda a colores según que por ella pareçia, el tenor de la qual de berbo ad berbum es el que se sigue…". Transcription made of the transfer of the authorized copy of 1450 was made in 1631. Both documents have been collated confirming the equality of the text, but the state of preservation of the document on parchment (the one of 1450) makes it preferred to use the copy of 1631 for a more faithful transcription.

[7] AHDL, Fondo Otero, doc. 758

[8] More about the diplomatic study of this document Baury [1].

Fig. 2. AHDL, Fondo Otero, doc. 758. Detail in which we can see "*Anno Domini"*. Photo by Mª del Carmen Rodríguez López and Rafael Ceballos Roa

The document tells in the eschatocol that María Núñez gives her heritage to Order of Cistercian, but indicates to Abbess of Gradefes (Theresa Alfonso)[9], it means Otero was founded as the filiation of Gradefes.

Fig. 3. Illustration AHDL, Fondo Otero, doc. 758. Detail in which we can see Theresa Alfonso as abbess. Photo by Mª del Carmen Rodríguez López and Rafael Ceballos Roa

2.2 The Media

Obviously, as fake news to have the expected effect, it had to be known and diffused. To achieve it, the authors use the information and communication media that they can already have at this time. We must not think only on ITCs, flyers and brochures and meaningful images have been used in the 19th and 20th centuries by political activists from anywhere. In addition, the development of the printing press eased the work to people who want to create fake news.

In the case of this work, they used the best media available to change the foundation of an abbey, from the history to a story.

As we have told, in 1450 they decided to make a copy of the foundation deed, only with the pretext if it is lost or destroyed, and it was very important to the monastery.

Then, they used the media to make the fake appear as a plausible think: a notarized copy of a chirography with pendent seals from 1240 with interpolated text, a canon of the cathedral and the General Vicar of the Diocese of León (for spiritual and temporal matters, the "discreet baron" Gómez Alfonso Barriquín), and the public notary Pero Alfonso. In the text, in addition to the falsehoods we have told, we can find a try to make it seem before the 15th century[10]. Also, the Vicar of the Dioceses of León and a notary[11] seem more than sufficient guarantors to support the content of the copy.

[9] Archivo Monasterio de Gradefes (AMG), docs. 470 and 485 in BURÓN CASTRO [4], we can see Theresa Alfonso was the Gradefes´ abbes from 1240 to 1251

[10] The text says was present the Prior of San Guillermo. San Guillermo was priory until 1306, in wich it ascended to abbey. To menction the prior (withou this namen) made the text before 1306.

[11] AHDL, Fondo Otero 472: "notario público por nuestro Señor el Rey en la dicha eglesia e en todo el obispado de León e su escriuano e notario público en la su corte e en todos los sus reignos…"

2.3 Authors and purpose

In order to understand the reason to create fake news, we guess the first is to know who the author of it is.

As we can see in the copy of 1450, the attorney representing the abbey is called Lope Núñez de Guzmán, a Cathedral´s canon. Curiously, he was the attorney when the abbess was Teresa Núñez de Guzmán[12], maybe his sister. We think they were who started the fake, linking their family to the foundress of the monastery, adding their surname "Guzmán" to María Núñez in the copy of 1450. This made their lineage more important, and the role of abbes stronger. However, there were more reasons. We have told the heritage of María Núñez was in two areas, the Luna and the Porma riverside. In the 15th century, the Porma riverside was controlled by the house of Toral: the Guzmán family. Moreover, the Luna riverside was controlled by Quiñones family, a big and powerful family, and enemy of the Guzmán.

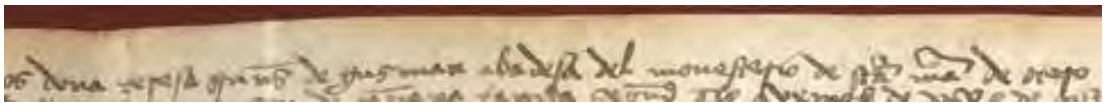

Fig. 4. Illustration 1 AHDL, Fondo Otero, doc. 760, detail in which we can see the *intitulatio*"Teresa Núñez de Guzmán." Photo by Mª del Carmen Rodríguez López and Rafael Ceballos Roa.

We can understand that if the Núñez de Guzmán were strong in Otero abbey, they had control over more people (and money) in their land (Porma) and even near to their enemy (Luna).

There is one more question to answer. Why do Gradefes the Otero´s mother? We know the foundress didn´t choose this abbey as a mother. To make Gradefes the mother of Otero meant they could visit (which means control) Otero. Otero lost autonomy, and didn´t choose its abbess[13]. We must see a bigger movement in the fake. Who controls Gradefes, will control Otero[14].

Curiously, when the fake was made, the bishop of León was Pedro Cabeza de Vaca, accomplices of the fake: shortly after the abbes of Gradefes was Catalina Cabeza de Vaca, a very important woman in this story.

2.4 Effect and consequences

In addition to dependence from Gradefes, the first consequence was the rise of the power of the Guzmán family versus the Quiñones.

Teresa Núñez de Guzmán, Otero´s abbes, died in 1482. The nuns of Otero chose Mencía de Quiñones as new abbess. Quickly, the Gradefes Abbess, Catalina Caveza de Vaca, pushed her away and put María Robles as new Otero´s abbess[15], María Robles was a nun from Gradefes.

[12] Otero´s abbes from 1446 to 1482. AHDL, Fondo Otero, docs. 757,758, 760, 762 and 763

[13] In a trial from 1560, Otero said was Holy See theVisitor of Otero. AMG 848, [4]

[14] Gradefes was older tan Otero

[15] María Robles was a nun from Gradefes, there she was chosen as Oteros abbess, the nuns sang Laudamus, and set he son the abbess´chair. AMG 726 [4]

Mencía de Quiñones went out Otero, started a trial, and took Otero abbey by force (she used 25 armed knights, and her family sent 700 soldiers)[16]. We can see Mencía de Quiñones as abbes in some documents from 1485. María Robles went to Justice[17].

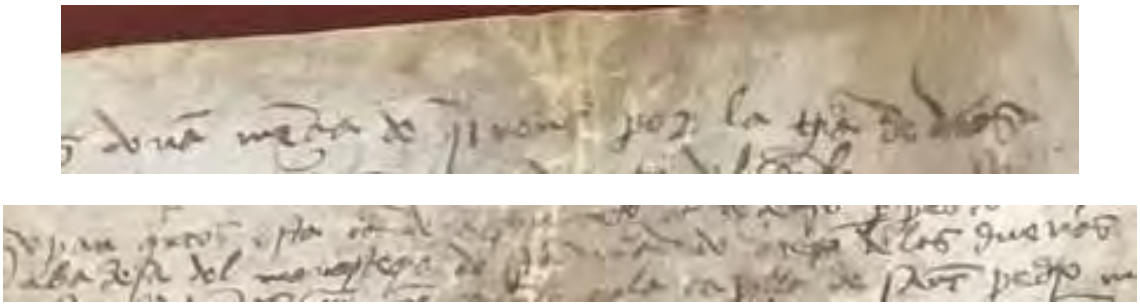

Fig. 5. AHDL, Fondo Otero. Detail of the document from 1485 with Mencía de Quiñones as Otero´s abbess. Photo by Mª del Carmen Rodríguez López and Rafael Ceballos Roa

In December 1489, we find new abbess, María Çavallos[18]. However, the problem continued during one hundred years[19]. Finally, from ending 16th century Gradefes exercised as Otero´s mother, visited the monastery and confirmed its abbess.

When Spanish Confiscation caused the end of Otero abbey, the nuns of Otero moved to Gradefes Abbey, making clear the degree of post-truth in which the community of Otero lived three hundred years after the launch of the fake news.

3 The role of the information manager

In the case we have shown, clearly the author of the fake news gets their purpose. They made a false story, they used the best media they could achieve, they improved their social status, they increase the control over the land and the political (and economic) power and they made their family stronger opposite to their enemies, becoming one of the most influential families of their time.

We must analyze the role of the information manager from two points of view: the role in the Historic moment of the fake news, and the role of the information manager today.

Through the facts, we can think of the archivist nuns of Otero played their roles, but in a secondary way. They gave the original document to make the false copy, and they knew to remove the original, they should keep it, but they didn´t do it. When the document of the foundation was needed, it was just a false copy from 1450.

In other ways, the professional information today must not be oblivious to past events. In this case at hand, diplomatic, philology and historiography have been the tools to unmask fake news. But the information manager must be the one who analyzes the phenomenon itself of the specific fake news.

[16] Archivo General de Simancas (AGS), RGS,LEG,148312,39, the kings protect Otero for the damage caused by Mencía de Quiñones, 1483, December.1483, December, the kings send the warden of the towers of León to protect the abbess (AGS//RGS,LEG,148512,156), and requires the Count of Lunas, as relative of Mencía, to make the appropriate investigations on the case (RGS,LEG,148512,157)

[17] AGS//RGS,LEG,148708,359, Commission to the corregidor de León and Captain Bernal de Avendaño, to restore Mrs. María Robles, abbess of the monastery of Santa María de Otero de las Dueñas, said her monastery, from which she was violently expelled by Mrs. Mencía de Quiñones and people of the count of Luna, who settled there. 1487-08-25, Burgos

[18] AHDL, fondo Otero 767

[19] In 1547 a copy of a brief by Leo X on the restitution of the abbess. In 1560, dead Francisca de Acuña, the monastery chose Beatriz Vaca as abbess. The Abbess of Gradefes, Ana Ramírez de Quiñones, tried to impose her authority by forcing the Obates of Otero to swear obedience, who turned to the Holy See. Judgment won by Otero, appealed and revoked by Gradefes, and in turn appealed and confirmed by Otero

4 Conclusion

We mustn´t assume fake news are a recent phenomenon, instead of the technologies to make it in a better way. Today fake news is better and more widespread than some time ago. The important is it seems real.

We have shown a methodology to study fake news, based on the purpose, media and effect of the fake news, also the location of the false data. We have used fake news from the 15th century, but we can apply this methodology for any kind of fake news.

The systematic analysis of this phenomenon can contribute to its understanding, detection and consequently its dismantling. Information managers must ensure that the information they are managing is true.

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″Bib-bot” as Modern Technological Bibliotherapy

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Abstract. Nowadays smart devices are used in almost all fields of life. Moreover, the children of the so-called Internet generations (Z and Alfa) use these most of the time.
Being students of the teacher-training degree program (Hungarian literature, language, library majors) at the University of Debrecen, the authors' aim is to develop new methodologies of teaching/reading for their future teaching work. In the present study, they wish to elevate the methods of classic bibliotherapy to a digital level, by using a chatbot. It is a computer program based on algorithms and simulates a normal conversation between a human being and a machine tool. These types of software are used widely in various areas, mainly in marketing, web shops, booking, etc. Following in the wake of the already-existing variety of possibilities, the authors' attempt is to be revolutionize an educational service, by applying this software. To this end they created a chatbot and named it ″Bib-bot.”
″Bib-bot” combines: IT, LIS, literature, psychology. The online-conversation topics will be fairy tales, poems, what more, songs. These abound in examples of friendship and family crisis, problems, lack of self-confidence. The authors will attempt to offer solutions to the different situations through a well-known methodology in a digital environment. The chatbot will make it possible to follow the children's response online. It will help us develop the students' emotional intelligence, critical thinking and digital competence, not mentioning the benefit that thereby their text comprehension can improve and their willingness to read will be increased in an e-world.

***Keywords*:** chatbot; children, e-bibliotherapy

1 Prologue

Established in 1939 by the Hospital Division of the American Library Association, library therapy was officially recognized as a library service. The interdisciplinary nature of bibliotherapy is undeniable since it has been used in medicine from the outset and then in literature. Today, psychology, pedagogy and, of course, library science, form a unity in the success of therapeutic activities. The word and purpose of books and therapy also show the purpose and function of the practice-oriented concept, namely the healing, medicine, the mental and physical health of the people, the achievement and maintenance of the state of well-being. Clinical bibliotherapy has stepped out of the walls of healthcare institutions and has begun to be used by other groups of healthy people to maintain mental health, so-called developmental bibliotherapy (Gombos & Vörös, 2015). Developing bibliotherapy, literary therapy and story therapy have become more and more popular in libraries in Hungary lately.

Because of the information society, the world of digital devices, and the online presence, more and more people think that libraries have lost their legitimacy in their traditional form. More and more people are buying e-books instead of printed ones. Libraries, regardless of the type, need to keep up with modern technological changes. Libraries have already undergone many changes to meet the needs of modern humans: digitizing documents, transforming functional spaces, leasing computers, e-books, laptops, tablets, Wi-Fi for readers, and more. Beyond these services, modernization has a significant impact on librarians' work and requires constant innovation, as not everyone was born a so-called digital native. The situation of newly graduated librarians is not easy either, as generational differences (gap) are getting narrower,

and today's information technology knowledge and online presence of children is growing exponentially, and so are the needs of library users. In line with modernization, a new methodological type of developer bibliography, developer e-bibliotherapy, has emerged. The concept of the new method has been defined in Hungary as follows: “e-bibliotherapy is a type of bibliotherapy located in the line of art therapies that incorporates the technical achievements of the 21st century (iPad, interactive whiteboard). Participants in e-bibliotherapy sessions use literacy tools to process familiar literary works, enabling them to develop digital competence in addition to the traditional effects of bibliotherapy. (Gulyás, 2015)

In this paper, we attempt to outline a novel method of e-bibliotherapy using a completely new, modern technology, outlining theoretical and practical possibilities. Users would participate in the session by communicating with a chatbot on various ICT devices, taking advantage of the endless possibilities of virtual space.

2 Chatbot definition

Chatbots are computer programs that are capable of having conversations similar to those of people, often in order to automate or optimize a business process (communication). Chatbots range from simple to complex, with the latter utilizing a wide range of artificial intelligence.

(Szűcs and Jinil, 2018) In contrast, simpler, scripted, tree-structured chatbots handle basic messages and requests from users. When algorithmizing, the creator pre-programs response options. So, these are programs used to simulate the machine and human communication, the parties involved communicate in simulated dialogues.

You can meet chatbot nowadays on any online interface, at food ordering, banking, marketing company’s website. The idea behind our study was the chatbot used as a promotional tool for the Aegon Contemporary Poetry Award in 2019[1]. Through this software, users can participate in a simulated conversation between person and machine through a messaging interface made available on the insurer's Facebook page. The aim of the promotion is to promote contemporary Hungarian literature with the slogan "Literature moves to our mobile." There are many examples of this program for educational purposes: SafetyBot, which gives kids tips on how to use the Internet safely, or the so-called NerdyBot[2], which helps students learn as a personal learning assistant.

3 Experiences

Encouraged by this, the authors of the study, Researchers' Night 2019, Future Informatics, created two chatbots with the same function and set up for an informative conference and program series. Twenty people of elementary and high school age participated in creative activity. Participants conducted a simulated conversation with a chatbot called the Research BOT, with pre-fed response optimization. The workshop was hosted by the University and the National Library of the University of Debrecen, where participants could learn about the library's functional spaces, services and resources in a playful, interactive context. The session was based on the search, interpretation and use of information. Through this, users had to search the library's print file with precise instincts, broken down into groups and using their smartphones. At the end of the session, after solving the player's tasks, the chatbot asked users to comment on the creative session:

[1] You can more information about the Aegon Contemporary Poetry Award. Retrieved: https://www.aegon.hu/sajtokozlemenyek/kortars-versek-chatboton-mobilunkba-koltozik-az-irodalom.html

[2] There is more information about NerdyBot in this website: https://gonerdify.com/nerdybot

"I really liked how they helped us search for information quickly and efficiently via messenger, a programmed robot. It was very exciting and I had a great time during the class. Thank you for the opportunity to go because it was so much fun." (15-year-old boy's reply)

4 Preparation and Operation of the Chatbot

The huge advantage of the chatbot is that anyone can build the simplest type without programming knowledge. The chatbots we use are made with the help of BotStar[3] free software online. There are many online chatbot builder websites that provide the ability to create chatbots in a simple, design-friendly way. The application we use also provides the user with a framework of premade chatbots, we can try different themed templates to shorten the time it takes to create a new chatbot. The software can be integrated with various social media chat platforms so that it reaches the user directly. Nowadays, most people have a Facebook profile and use Messenger every day. This software allows developer e-bibliotherapy chatbots to access larger groups (even unlimited) at once. There are many advantages and disadvantages to this:

Advantages: not only maintaining small group work; multiple occupations can be held simultaneously in the virtual space; participants are "forced" to engage in activity while in a "live" session someone may be left out of dialogue; anonymity makes participants more direct and honest, as can be seen with online platforms; Messenger makes it easier to express ourselves when there is a short period of reflection (this is also a disadvantage, as there is no immediate association with free association); the duration of the session is not limited, answers can be lengthy; chatbot "tirelessness" minus the human factor.

Disadvantages: lack of intimate, direct mood; the duration of the occupation is infinite; limited response; measurement, drawing conclusions only afterwards.

5 Developing bibliotherapy

The phases of the usual method of development bibliotherapy: getting to know the work, oral discussion and summary. The aim of the sessions is to develop participants' self-knowledge, emotional intelligence, self-confidence, problem-solving skills and prevention. Literary works, reading, help self-actualization, compassion for others, and put life's problematic situations in a new perspective.

Levels of developer bibliotherapy: intellectual, social, behavioral, emotional. By doing so, we encourage the participant to realistic, critical thinking, approaching problems from multiple perspectives, social awareness, sensitivity, developing the ability to empathize with others, and gaining indirect experience (Meggyesné Hosszú and Máténé Homoki, 2019). In developing empathy, we can rely on two factors: cognition (rational interpretation of a given situation from the other party's perspective) and affection (the mapping of the other party's emotions within ourselves).

6 Literature therapy, story therapy

As a teacher training pupil at the University of Debrecen (Hungarian language and literature and librarian teacher), we gained a great deal of pedagogical experience to write the study. During our teaching practice, we gained insight into the behavior and attitudes of elementary and high school students through both literary and librarian goggles. According to Éva Jeney, bibliotherapy moves beyond the junction of literary value. In the case of literary value-focused

[3] The program what we used for the Bib-bot: https://botstar.com .

sessions, participants need to be guided back to the work, feedback to the text, and existential reading will be the foundation of the session. In this way, besides developing personality, the process of educating the reader in the course of developing literary therapy is realized, since besides getting to know the works the client's interest expands. In the case of creative-storytelling therapies, samples are placed in the reader's hands in accordance with the epochs of the human life cycle, but story therapy is not one of the closely related bibliotherapy. (Boldizsár, 2014)

7 Selection of Works, Method, Effect

There were several aspects in the selection of the literary works we wanted to process, and we would like to present examples and samples to the young people. This example can be "deterrent" or follow. Carefully select the literature for an occupation, as texts can be dangerous. Goethe's novel The Sufferings of Young Werther (The Sorrows of Young Werther) was considered dangerous literature because of the Werther effect he exerted and the suicide wave throughout Europe following the publication of the book (Gulyás, 2015). The purpose of the chatbot we have created is consistent with the goals that appear at the levels of developer bibliotherapy, most notably through mediating the value system in fairy tales. Through the study and discussion of a literary work, the reader and the text meet in a fictitious space, a fictive encounter, at the same time realizing the approach to the work, but also the necessary distance.

Based on this, we built three stories into our developer e-bibliotherapy chatbot during our study. Why a fairy tale? “The tale's optimistic philosophy of life and fairy-tale magic provide the foundation for an inner belief and self-confidence that helps us to face the seemingly insurmountable obstacle of thinking about a solution in the midst of everyday difficulties and problems. (…) The tale promotes the creation of a safe system of values: it builds respect, love, perseverance, and loyalty to ourselves. In many countries, including Hungary, the exemplary nature of folk tales has often guided people in their lives (Kádár, 2012).

In the selection of works, we preferred the three works of the well-known Danish writer Hans Christian Andersen (The Little Mermaid; The Snow Queen; The Wild Swans).

We associate Andersen's stories with a kind of negative outcome alongside magical and dreamlike images, though Heredi's systems of perspective all appear in the chosen tales, saying that "the tale is basically a horrible world, out of the reach of unauthorized children, and they start to fear. It is important to emphasize here that one of the greatest virtues of a traditional fairy tale is that it only uses text that parents, for example, usually read, and that text usually omits any unnecessary elements that might scare the child, such as how the bird tore the body of the fairy-tale hero, only to remember it' (Herédi, 2018). So reading has paramount importance, instead of watching television with fairy tale formulas. All storytellers need to isolate each emotional charge, and to seek emotional accuracy, which can be explained by the receptivity to childhood emotionality (Burns, 2001).

During listening, the functioning of the cognitive and affective apparatus activates, as Annamária Kádár puts it: „in the left hemisphere we process the verbal content of the story, in the right hemisphere the deeper meanings, metaphors, emotional tone of the voice, facial expressions” (Kádár, 2012). The unconscious is affected by the tale, and individual moments are stored in memory, which may occur later in life, under certain circumstances and situations. The individual scenes, recurring motifs and symbols have a kind of extra knowledge that is displayed in a coded message to the individual. And this message is rewritten to his own life. This hypothesis is also supported by Kádár, who calls it the emotional-motivational driving force.

In another approach, “Fairy tales convey the message on a symbolic level, packing important content into images, just like dreams” (Kádár, 2012). So our own soul is reflected in the tales,

according to Bettelheim, „subject matter to the rational teachings of others; but it can be formed and informed by what fairy tales have to say" (Bettelheim, 2010).

According to Rebeka Herédi, fairy tales have a story, the basic purpose is to identify with your reader/audience, and the key is the desire to develop. He explains the susceptibility to this by the narrative of the people, the so-called. Indirect experience is being gained. We are able to relate symbolic language to ourselves, and there is a problem that causes the protagonist to move out of his comfort zone. The three stories that have been selected have a positive outcome (even in an obscure form). The protagonists encounter obstacles and reach their goals by overcoming trials. Perseverance and diligence have brought about the expected reward; The main attributes of the protagonist of the three tales (see friendliness, optimism, helpfulness, responsibility, humility, goal orientation, determination, etc.) exert a positive influence on the recipient by placing him or her in the coordinate of the fairy-tale value system. Full character.

Fairy tales provide an opportunity to re-evaluate the importance of things, to take responsibility for our own decisions, what consequences they have. It helps to isolate and isolate ambivalent emotions, conveying a kind of childlike world. It is reassuring for the child to „project his uncontrollable fervor into the negative characters of the tale. Through the tale, you learn that all your feelings are part of your personality and that they can be contained, managed, and controlled" (Kádár, 2012).

Andersen's peculiar conception of life appears in front of us in The Little Mermaid, the contrasting views and habits of the earth and water world in the tale. The existence of these two differences will affect the structure of the tale, and the dilemma of the question of death will frustrate the young character's state of mind.

As the years have grown exponentially longing, the narrative presentation has a significant effect on the feeling of outsiders (see room outlook). The window motif, which represents the place of fantasy, appears as a literary topo, thus manifesting a sense of longing that affects the individual's state of mind and becomes introverted.

Turner's notion of liminality may be relevant to the work as if the individual were to become without a group without a social role. In his opinion, this mentality is the most common in adolescents (Turner, 1969), and they already change their medium during puberty and do not find their place in the world, and this may affect their development. The motive of longing will represent the plot, with the little mermaid getting help and reaching the first stop of her goal: getting her feet. Turner believes that change is accompanied by different rites, as a result of which the individual attempts to integrate into another culture. It can be interpreted as a ceremony when the witch constructs a possible way of crossing the two worlds with her magic.

The little mermaid gives her voice as a pawn and swaps her fins. Verbal communication ceases for him, the reflection of his desires does not reach the expression, he loses the main attribute of being. „Great intelligence is the body" (Nietzsche, 1941), but with the exception of any mimicry, our hero played a passive role in the series of events, did not try to seduce anyone, and was driven by childish naivety to the tide - it stems from his mentality. The prince loses something, so the tale comes to a crucial moment. The little mermaid has a choice: either kill the prince and then live, or choose her own death. With the latter occurring, as Kicsák puts it, „the heroine's soul guides her as an air girl for 300 years, and she will only gain her immortality if she witnesses the good deed of her children" (Kicsák, 2013).

In most tales, we can meet an evil character. The witch here embodies this person? Because of the pejorative use of names or the nightmarish narrative? Based on our collective reserve of tales, the reader would suspect the witch because they are typically anti-heroes. Our protagonist volunteered to go to her, no one asked for it, even though the witch already knew her intention. He was warned of the consequences of the spell, even the words of the old queen could be taken out of the argument, so the information would be credible, not fooled. This compromise (or we can call it a business) has a pay-off, the little mermaid could decide her own destiny,

whether she gives her voice, her identity or not. The little mermaid's self-will force her to death, not influenced by any external factor, she can say she will be the cause of her death, so she will be the enemy herself. The tragedy of the little mermaid was not caused by her inability to express her "love" but by a series of her own decisions. She did not return to her home, instead rescued the duke, and for his self-sacrifice received a new hope to fulfill his desire, giving him a chance for a long (eternal) happy life.

In each of the three Andersen stories we choose, the heroines go through trials that are accompanied by physical pain. Like most fairy tales, it improves children's problem-solving abilities. So, „*a fairy tale is always about something that endangers the life process, usually the starting point of the fairy tale, and shows the path of development that leads from this problem to a new life situation*" (Kast, 1988).

The story of The Snow Queen and The Wild Swans is interlinked by Kicsak and interpreted in the light of the motifs of the romantic children's picture, according to the "ideal child." It draws attention to the positive qualities of heroines (see humility, kindness, courage, etc.), which are human parables of unselfish love of friends and siblings. They influence not only their own lives but also the lives of others by their decisions. (In our opinion, the idealization indicator can also be drawn on The Little Mermaid's protagonist, though longing there was the real key.)

Because of the evil goblin in the Snow Queen, the mirror pieces hit Kai, who was able to distort all good and good, to magnify evil, and to make mistakes. Despite Kai's distorted personality, Gerda still believed in him. Kai was taken by the Queen of Heat herself, and everyone in the village believed the boy dead. Still, the little girl began her search and had to face various ordeals and trials. We can distinguish four structural units from Gerda's path (the wizard's flower garden; the prince and the queen; the little robber girl; the Lappish and the Finnish women).

Gerda finally found Kai in the Snow Queen's palace, melted the fragments with a hot tear and began to sing to the boy. Unconditional love led to him and broke the curse. This strong emotional bond also appears in *The Wild Swans*. The endless bond between the princes and their sister led them to unlock the curse. The girl saw the solution in her dream that her brothers had to weave in silence. All it took was patience, humility, and working hands. We put these Andersen tales into the structure of the chatbot, in a playful yet thoughtful way.

8 Making a Bib-bot

Botstar's online chatbot builder website will guide you through the process of creating your application. First and foremost, you need to specify the parameters of the chatbot: welcome message, avatars, whether the chatbot mimics the striking points of the reply, the response time frame, which time zone the chatbot should be. You then need to connect the chatbot to a Facebook page where it becomes available to users and then select from a variety of packages that modify the chatbot's limitations, the free version can handle hundreds of conversations.

During the "build," the maker has some premade blocks available. Includes audio, image, gifs, external files, recordings, etc. On the one hand, we can make our staff more colorful and aesthetic, and on the other hand, by introducing various media and using them in a thoughtful and thoughtful way, we can introduce our clients to numerous forms of information and information used on the Internet. Building a chatbot follows the same pattern as bibliotherapy sessions, the first step is to get to know the literary text, but the software also offers alternatives: reading, listening to the text, watching the tale on video.

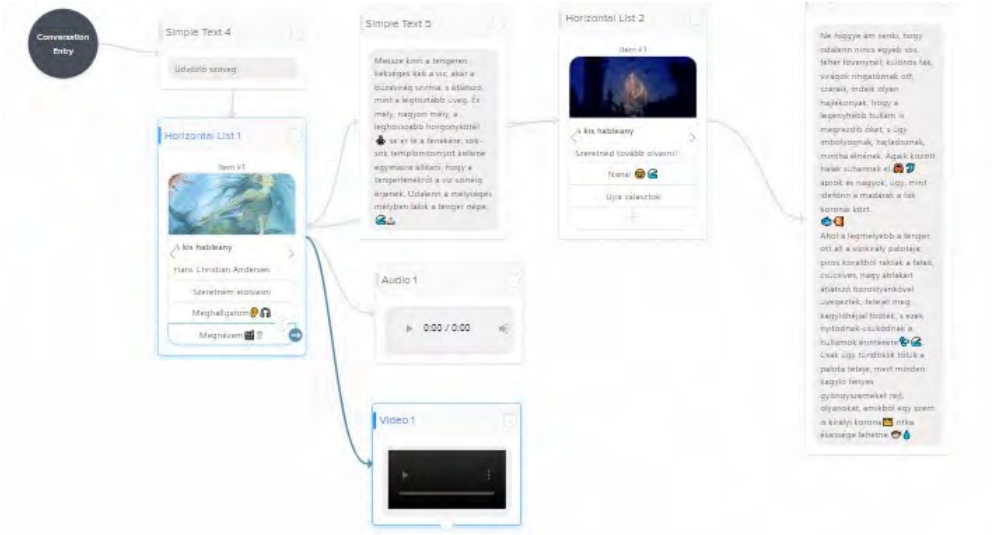

Fig.1. Structure of a Bib-bot

If the user chooses to read the text, the online tutorial will take much longer. The other two options reduce time. It may be interesting to observe how many people choose the text format, the actual reading. The software allows users to continue discussing the work on the same route once they have selected the option once they have become familiar with the work. Another issue is the extent to which different media have influenced getting to know the cult and the thoughts it evokes. The software makes it possible to integrate other online applications, such as comics, word cloud, online museum, creating audiovisual files, editing gifs, memes, etc. that can help with text processing. (They are also modern tools of art therapy.)

8.1 Errors, expected results, disadvantages

The personal interaction between the therapist and the client is replaced by the chatbot, which produces a different emotional effect than a live session. Chatbot created by Microsoft and published by China's most popular website in 2014, the regular users shared their problems, after some time, it has been named the chatbot, "I love you," "I miss you" (Szucs & Jinil, 2018). In our further research, we intend to implement the theoretical background so far in a practice-oriented way, where we explore the differences between the emotional impact of virtual and real-world occupations.

8.2 Conclusion, plans

The immediacy of the chatbot offers the opportunity for widespread use of fairy tale therapy so that we can deliver healing to users where circumstances cannot allow the therapist to be present. This could be accomplished in Hungary by adapting to the storyteller program. In addition, we are planning to build a chatbot based on artificial intelligence in the future by acquiring programming skills. A chatbot with AI would be able to solve some dysfunctions e.g., would recognize keywords in the answers and would further analyze the story. As with thematic bibliotherapy book lists, chatbots can be created with a thematic structure. We can expand the processing of the three tales so far so that each child can find what he or she likes, the tale that is most relevant to his or her life and problems.

9 Conclusion

In our study, we integrated the knowledge and information we acquired during our university education therefore we could have the appropriate professional knowledge during the years of our future library-teaching profession. We want to use all of this in the future to educate our future students on critical, logical thinking and, above all, to develop their digital competence, which is essential in the 21_{st} century.

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Challenges in Annotating a Corpus for Automatic Hate Speech Detection

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Abstract. Hate speech and other offensive content has been increasingly observed on social media. This content is insulting, hurtful or obscene and targeted at one person or a group. Companies are tackling this issue using automatic systems. One of the first steps to build an automatic system is to annotate a corpus the system can learn from. Since the quality of this system relies on the annotation quality, being aware of challenges and handling them is crucial. This paper aims to categorize tweets that were part of a German data set and difficult to annotate. The amateur annotators achieved substantial interannotator agreement. Nevertheless, various difficulties arose, as annotation is a complex task. This paper gives an overview of the difficulties encountered and discusses examples, such as certain language registers which are exclusively used as insults in right-wing groups, but unknown to the general public. The goal of this research is to increase awareness about the importance of annotation and its difficulties, so that future annotation guidelines can be improved.

***Keywords*:** hate speech, annotation, automatic hate speech detection, HASOC, offensive language detection

1 Introduction

With the rise of computer-mediated communication, a huge amount of hate speech and other offensive content has been observed on social media, which poses a risk of impairing critical discussion. The content in question could be insulting, hurtful, derogatory or obscene and is usually directed from one person to another or, in the case of hate speech, to a group of people. The large-scale consumption of such content can pose a threat to democracy, as it undermines the ability to have an objective discourse (Habermas 1984). The challenge for open societies is to deal with objectionable content without enforcing censorship. As a result, Social Media Companies have started to monitor users' posts and remove hate speech. Therefore, the demand for automatic systems is increasing. HASOC4 is a track for automatic hate speech and offensive content identification in Indo-European languages with more than 80 registered groups participating and was organized in the context of the FIRE conference. One of the prerequisites for building automatic systems is to create and annotate a corpus the system can learn from. HASOC aims to develop data and evaluation resources for languages in which little research exists. Two datasets consisting of tweets retrieved in May 2019 have been annotated in English, German and Hindi respectively. As the quality of the future identification of objectionable content relies on the annotation quality, being aware of the challenges and handling them is crucial.

In order to understand the challenges, the annotation of the German data set was monitored. Along with guidelines, annotators were provided with support in the form of meetings before and in the middle of the annotation process. The annotators had the opportunity to submit tweets they viewed as difficult to annotate. The cases that could not be confidently labeled were

4 https://hasoc2019.github.io/

collected in order to determine patterns and themes. Deriving from these categories which cause hateful and offensive content to occur more often were formed. An example of such a pattern would be the use of certain language registers, which are only used as insults in certain groups. Another issue was occurrences of irony.

Understanding how and why certain linguistic, stylistic and pragmatic aspects of objectionable content make annotation challenging should help other researchers to adjust guidelines, raise awareness, improve their annotation quality and therefore increase the overall quality of hate speech detection. This research aims to give an overview over difficulties in annotating hate speech and offensive language for other researchers in the field. A future perspective would be to establish solutions for these annotation difficulties.

2 State of the art

Recently, a lot of research has been conducted in the field of hate speech detection. As for the annotation of hate speech, many different approaches can be selected. Often, a combination of expert and amateur annotators is chosen (Basile, Bosco, Fersini, Nozza, Patti, Rangel, Rosso, Sanguinetti 2019; Waseem 2016). Nevertheless, employing amateur annotators usually brings results with high interrater agreement when combined with annotation guidelines (Davidson, Warmsley, Macy, Weber 2017). Such guidelines should provide support to annotators and align their understanding of hate speech. Although crucial for the annotation quality, guidelines are often not disclosed in papers. This makes it difficult to reach a consensus regarding a definition of hate speech (Schmidt & Wiegand 2017).

In general, the annotation is considered a difficult task. Nobata, Tetreault, Thomas, Mehdad & Chang (2016) give reasons for the difficulty. One is the lack of context that comes with the annotation process. Oftentimes, the annotation is not possible for single tweets when posts are embedded in a broader context, like a conversation (Nobata et al. 2016). Moreover, hate speech annotation is often reduced to keyword spotting (Fortuna & Nunes 2018). Even though offensive language and hate speech occur together regularly (Warner & Hirschberg 2012), they must be analyzed separately, since one can also exist without the other. Another problematic area is the use of sarcasm (Nobata et al. 2016). Adding to that is the constant development of language that produces new expressions, which are used in certain groups (Fortuna & Nunes 2018). In order to understand these new terms, cultural knowledge about the society and group in question is required but is not universally given for all cases (Fortuna & Nunes 2018). These terms can also be ambiguous and have different meanings in various communities, which further increases the challenge (Nobata et al. 2016).

Apart from linguistic reasons, human factors must be acknowledged. Annotation judgments rely on the knowledge the annotators have about hate speech (Waseem & Hovy 2016). Due to personal sensitivity, biases concerning certain topics influence the annotation (Roß, Rist, Carbonell, Cabrera, Kurowsky, Wojatzki 2016).

3 Main part

As the difficulty of annotating derogatory content is a known problem, the annotation of HASOC was prepared thoroughly. The guidelines were inspired by the IGGSA guidelines for the GermEval (Ruppenhofer, Siegel, Wiegand 2018) and the OffensEval guidelines (Zampieri, Malmasi, Nakov, Rosenthal, Farra, Kumar 2019), as we are dealing with not only hate speech, but offensive and profane content as well. Thus, the guidelines were phrased as follows:

> HATE SPEECH: Ascribing negative attributes or deficiencies to groups of individuals because they are members of a group (e.g., all poor people are stupid). Hateful

comment towards groups because of race, political opinion, sexual orientation, gender, social status, health condition or similar.
OFFENSIVE: Degrading, dehumanizing or insulting an individual. Threatening with violent acts.
PROFANITY: Unacceptable language in the absence of insults and abuse. This typically concerns the usage of swearwords (Scheiße, fuck, etc.) and cursing (Zur Hölle! Verdammt! etc.).
OTHER (NONE): Normal content, statements, or anything else. If the utterances are "normal" and not offending to anyone, they should not be labeled. This could be part of youth language or other language registers. (Mandl, Modha, Madjumer, Patel, Dave, Mandlia, Patel 2019)

Task 1 was a binary decision whether the content in question was profane, offensive or hateful (HOF) or neither (NONE). If the tweet was a neutral one, task 2 would be disabled. If a tweet was set as HOF, the annotator had to specify if the content was profane (PRFN), offensive (OFFN) or hateful (HATE) in task 2. Task 3 dealt with whether hate was untargeted (UNT) or targeted (TIN), but this task was ignored for this annotation.

A screenshot of the annotation tool for Hindi can be seen in figure 1. The interface was developed exclusively for the annotation. It is possible to report incomplete or non-German tweets, in which case they were deleted.

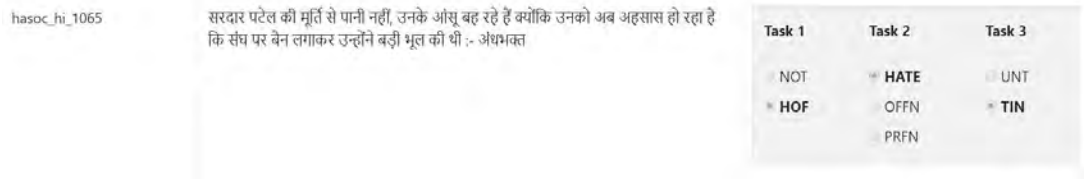

Fig. 1. Examples of an (already labeled) tweet with the corresponding tasks

The annotators always had the opportunity to submit tweets which they could not label confidently. These were collected and discussed in plenum. In many cases, it was difficult to find a satisfying solution. Moreover, the dataset was reviewed after the annotation and further unclear tweets were collected. The resulting set from the annotation included 3819 tweets. One hundred eleven tweets were sorted into HATE, 210 into the OFFN, 86 into the PRFN category, while the remaining were labeled as NONE. The inter-annotator agreement was substantial (86%). In the following, we aim to group tweets that were difficult to annotate into categories and portray them.

We illustrate them with examples from the collection. As a result, we propose a way to structure future guidelines to improve annotation quality.

One of the main challenges faced was the distinction between objectionable content and personal opinions. Differentiating both sparked several discussions among our annotators. Some reported viewing many statements as opinion that should not be labeled. Others said that the phrasing was too derogatory. One thoroughly discussed example is the following tweet:

Original	Translated
"FRAU MERKEL HAT DAS BLUT MEINES SOHNES AN DEN HÄNDEN". Diesen Satz sollte man in den Stein der Kaiser-Wilhelm-Gedächtniskirche meißeln. Groß genug, dass der Staatsbischof ihn niemals vergisst. Eine solche Predigt ist wie blanker Hohn.	"MRS. MERKEL HAS THE BLOOD OF MY SON ON HER HANDS". This sentence should be engraved in stone at the Kaiser Wilhelm Memorial Church. Big enough so that the state bishop will never forget it. Preaching like that is purest cynicism.

Some annotators argued that a person is entitled to the opinion that the German chancellor Angela Merkel is indirectly responsible for the death of another person. The fact that they want the world to know about their opinion is also viewed as part of their right of free speech. Others saw the insinuation of murder as too severe and said that the phrase "having blood on one's hand" should be labeled as OFFN; thus a consensus was difficult to reach.

The use of language registers which are not used generally but rather by specific groups proved to be a challenge to annotate. In our data set, we noticed that the political right and left wings each developed their own vocabulary. Usually, this vocabulary is used to target another group. Most of the terms appearing in our data set are describing members of left-wing groups or immigrants / refugees. Some examples are

'Buntmensch' (colorful person) and 'Gutmensch' ('too good' people, especially towards things or people the authors do not approve of, e.g., supporting refugees, climate justice, etc.). Adjectives describing political parties and their followers also appeared. They were used to define them, like 'linksblöd' (lefty-dumb, meaning following the left political agenda without thinking). Derogatory adjectives are used by the left-wing in a similar manner, for example 'rechtsversifft' (right-filthy, meaning actions are done based on a right-political motivation). The mentioned terms carry a derogatory or offensive meaning with them, but the modification is meant to specifically target a certain group of people. Due to the ambiguity of these expressions, annotators found it difficult to label the tweets containing them. Some terms used by groups to insult members of another group had an already established meaning. For example, members of parties on the right side of the spectrum were labeled as 'Nazis.' The term was also combined with newer ones to convey a similar message, e.g. 'Euzis'(a combination of the terms 'EU' and 'Nazis').

Stereotyping of minorities is a problem on platforms like Twitter. In annotation of derogatory content, this is particularly difficult. The issue is illustrated by the following example:

Original	Translated
Wie krank und Hinterweltlerisch Immer noch viele Menschen sein können, wir haben zugelassen, das uns der tot holt, wenn wir nicht jetzt reagieren und diese Migration nicht rückgängig machen	How sick and backward many people still can be, we have allowed death to come for us if we don't react now and don't reverse this migration

As stereotypes are based on negative characteristics that are attributed to members of a group, they can be considered as hate speech. In this case, the person who wrote the example suggests that immigrants are killing people, and others are blind to it. Difficulties arise when there are no harmful or derogatory terms and offense or hate are detectable only on a pragmatic level. Moreover, the type of the stereotype must be considered. Even though stereotypes are always generalizing, there are different levels of severity. An example to illustrate this would be the difference of intention between the stereotypes 'Germans are always on time' and 'All Germans are Nazis.' One stereotype tries to say something positive about all Germans, the other one intends to portray Germans in a negative light.

How to handle various types of insinuations was also frequently discussed. We observed a lot of insinuations towards individuals. They were either accused of having committed a crime or being mentally ill. The first example accuses Angela Merkel of being responsible for a murder, because of political decisions she has made. The media and the police force are accused of covering the murderer.

Original	Translated
Ein weiterer toter Deutscher, welcher auf das Konto von Merkels irrer Politik geht. Der 17jährige könnte und würde noch leben... Am Karfreitag ist es passiert. Presse und Polizei schwiegen und deckten den Täter. Dieser wurde jetzt im Großraum Paris festgenommen.	One more dead German, who died due to Merkel's insane politics. The 17-year-old could and would still be alive. It happened on Good Friday. The press and police kept quiet and covered for the perpetrator. He has now been arrested in the Paris area.

In this case, it is hard to determine if the insinuations can still be seen as acceptable or if they go too far. Mainly three questions have to be answered to annotate this tweet: 1. Is it okay that people voice their opinion that political leaders have made poor and dangerous decisions by saying that those decisions lead to the death of other people? 2. Is it acceptable that the author of this tweet accused the police of witnessing murder without acting or doing their job to catch the criminal? 3. Is it acceptable to accuse the press of not doing their job, the objective publication of news, and instead accuse them of protecting a murderer? All these questions lead to an individual moral judgment.

Original	Translated
Alfred Nobel würde sich im Grab rumdrehen. Ein Obama (führte die meisten Kriege im Amt eines US-Präsident), wurde der Friedensnobelpreis verliehen. Nun ein psychisch krankes Kind, steht nun ganz weit oben auf der Liste für die Verleihung des 'Friedensnobelpreis'. Sind die krank?	Alfred Nobel would turn over in his grave. Obama (lead the most wars in the office as U.S. president), got the Peace Nobel Prize. Now a mentally ill child is on top of the list for the bestowal of the 'Peace Nobel Prize.' Are they insane?

The example above shows another type of insinuation. It is accusing someone of a mental illness. Regardless of whether it is true, the decision whether it is offensive has to be made. For that, the publicity of the tweets has to be considered. Assertions like this have a huge range and are possibly sharing private information. Similarly, people can be accused of things like drug use in order to undermine their authority.

Also an issue is indirect insults of groups. The following example was a highly discussed case:

Original	Translated
Ich habe es gewusst Allah ist der Teufel	I knew it Allah is the devil

This illustrates the slander of individuals or figures which could also be considered as an offense towards a whole group of people, in this case Muslims. It can be seen as an indirect insult. The difficulty in this case is the lack of an existing person as a target.

Another challenge for annotators was to differentiate between reporting news and insulting a person or a group. Tweets that reported an event, often a crime, and mentioned the nationality or ethnicity of the people involved were frequently discussed.

Original	Translated
Drei syrische Jugendliche bedrohen am Pfingstwochenende an drei Tagen hintereinander Bahnreisende, auch mit Messer und belästigen Frauen und Mädchen – Polizei lässt sie immer wieder laufen	Three Syrian juveniles threatened travelers on trains on three consecutive days over the Pentecost weekend, they also used a knife and harassed women and girls – the Police let them walk freely over and over again

The main issue with labelling these was that annotators considered the motivation behind the statement to different degrees. On the one hand, tweets like the example could be written in order to stereotype immigrants / refugees as criminals. To avoid a backlash, the author could have packaged it as a news report. On the other hand, this tweet could be a simple report without any hidden agenda. Based on the tweet itself, one cannot know the answer.

Also difficult was the use of quotation marks. We observed that quotation marks were used for two purposes: they either mark a citation or could be a sign for irony. First citations will be discussed. One example is shown below:

Original	Translated
#HeinzHermannThiele: 'Dieses Land gerät in eine hochkritische Situation. Wir sind am Rande eines kulturellen Zusammenbruchs.“ Das Thema #Fluechtlinge sei nicht nur ökonomisch unbeherrschbar, es stelle sich auch die Frage nach unserer #Identität.	#HeinzHerrmannThiele: “This country is getting into a highly critical situation. We are on the verge of a cultural collapse.” The topic #refugees is not only viewed as economically uncontrollable, it also poses the question of our #identity.

The entire tweet is either a direct citation or written in the indirect form to show that it is a statement from another person. The author does not have to agree and could just report what somebody else said. Citations can be difficult to handle, because ignoring every citation would allow users to write anything, as long as they put it into quotation marks.
Next, the topic of irony in tweets will be discussed. Irony proposes a major challenge for annotating written data. We observed that some terms, like refugees, are put into quotation marks to indicate that a group of people are referred to as refugees, but the author does not see them that way. It leads to readers attributing bad characteristics with the mentioned group. Depending on the context, they could for example be indirectly labeled as criminals or leeches.

Original	Translated
Von den 1,7 Mio „Flüchtlingen“, die in registriert sind, gehen mehr als 1,3 Mio ÜERHAUPT KEINER sozialversicherungspflichtigen Beschäftigung nach, obwohl d allermeisten doch im besten Alter jg Erwachsener sind u vor Arbeitswillen nur so strotzen müssten	Out of the 1.7 Million „refugees,” who are registered in Germany, More than 1.3 Million do NOT AT ALL have any work that is subject to social insurance contributions, even though most of them are in the best age range. Young adults who should be filled with the desire to work.

The example illustrates this well. The author intends to say that refugees do not work enough to contribute to any social insurance company. The quotation marks show that the author does not see this group as individuals who are seeking safety from persecution and war.

One further dilemma is the use of emojis which can be considered profane (e.g., feces, throwing up). If the annotation guidelines only consider texts or images, no decision about emojis can be made. Therefore, they must be treated differently. As shown in the example tweet, a rather harmless text accompanied by emojis can turn into a possibly profane one.

Original	Translated
Sind die Neuseeland Frauen total bescheuert?	Are the New Zealand women completely insane?

One must consider that people understand emojis very differently (Miller, Thebault-Spieker, Chang, Johnson 2016); thus they are a blurry indicator for objectionable content.

Hashtags are extensively used on Twitter. They allow users to find content more easily. This is also the case for objectionable content, as the hashtags can be of derogatory nature. In annotation of derogatory content, this leads to the question whether hashtags should be considered. The following example shows the importance of this decision:

Original	Translated
Also mit Vollgas in den Abgrund??? #Demokratiestirbt #NazisRaus #fckafd #NoNeo	So full speed into the abyss??? #democracyisdying #nazisout #fckafd #NoNeo

This illustrates that hashtags can convey a lot of hate, as they are text-based as well. Moreover, they allow hateful tweets to be grouped together and make them easier to find, possibly reaching broader audiences. Because of that, hashtags should be acknowledged by annotators and looked at separately.

A pattern found in the data is the utterance of offense, violence or hate without a clear target. Because of that, it is hard for the annotators to decide whether the content has to be labeled as OFFN or HATE.

Original	Translated
Die Alte ist total durchgeknallt...	The old hag's gone completely insane...

A tweet often gives no information about why statements were made, as conversations consist of threads of replies, which cannot be considered. Thus, the lack of context is a difficulty for annotators. The last category of tweets, which were problematic, are cases in which an author used insults against him- or herself. An example of this is the following tweet, which was one of many similar posts:

Original	Translated
Bonnie lass Dir niemals den Mund verbieten, niemals. Du siehst was daraus geworden ist, schau dich nur um, schau dir nur Deutschland an. Das A…loch #Wiltewka, alias der #EkelWilfred, Papa #Wilberg von der Capitol und O. #Wilke #BonnieStrange	Bonnie never let your mouth be barred, never. You see what's become of it, just look around, just look at Germany. The A...hole #Wiltewka, alias the #DigustWilfred, Dad #Wilberg of the Capitol and O. #Wilke #BonnieStrange

The author calls himself "disgust-Wilfred," and also uses a censored swearword (a...hole). If this were targeted at another individual, this would be labeled as PRFN. In this case, it is hard to determine since the target is the person who posts the content.

4 Discussion

The categories we established are not static and are rather fuzzy, as they are also based on human judgment. Depending on the approach of data collection, the language and other factors, other categories might be present and some of the ones we presented might not appear in further annotation processes. Moreover, the annotated tweets do not always fit in only one category. As linguistic expressions, especially in written form, can be complex, they often contain multiple offensive aspects. This means that there can be several indicators which are making the labelling of a tweet difficult, which is illustrated by the examples we provided.

Comparing our results to the state of the art, we conclude that they largely support earlier research. The lack of context for the annotation of single posts is an issue which has been detected previously. It poses a difficulty in deciding whether certain terms and expressions must be labeled as offensive. Other frequently noticed problems are sarcasm and irony, which were noticed in combination with the use of quotation marks. It is one of many cases of irony which are difficult to annotate. The usage of group-specific vocabulary is likewise a highly discussed topic, which is also reflected in our research. The lack of group-specific knowledge made it difficult to interpret terms which are exclusively used within a certain community. Human factors like personal judgment played a role as well. We could observe this problem when a distinction between opinions and offensive content had to be made. Furthermore, interpretation differences played a role for the labelling of profane emojis. In the beginning, the reduction of hate speech annotation to simple keyword spotting was mentioned. This problematic simplification was an issue for us too, as annotators sometimes found it difficult to

detect hate speech and other derogatory content without literal terms of that kind. The understanding of these implications on content-related level has to be deepened for annotators.

Beyond that, we identified other difficulties which, as far as we know, have not been addressed yet. For example, the hidden motives behind news reporting through users are a frequent problem. Additionally, we found tweets containing insinuations of crimes or illnesses in order to derogate a person.

5 Conclusion

For the annotation within the HASOC track, we developed several categories to group together difficult to annotate social media content. These difficulties have different origins. Some were based on context-based concerns, like tweets which did not have a clear target and cannot be understood without context information. Adding to these are self-insults, which are an issue because the situation in which the utterance was written is unknown.

Furthermore, several categories are based on linguistic difficulties, such as the use of group-specific language registers. Often, the terms of these registers are unfamiliar to annotators. The use of quotation marks was challenging, as their use can either be a signal for irony or indicating a citation. Also notable are censored occurrences of profane terms. Hashtags are likewise a problem, as the decision whether to include them in the annotation process has to be made.

Often, annotation decisions are based on individual judgments. This is the case for insinuations of various kinds. These are tied to moral questions, which cannot be answered universally. Personal opinions in tweets pose a similar difficulty, as the border between them and insults is often difficult to determine. Further dependent on personal judgment is the interpretation of emojis, whose role in annotation must be established from the beginning. Other difficult cases were based on the occurrence of stereotypes, news reports, and offense or hate without profane keywords. Equally, the indirect insult of an entire group through the abuse of one individual can be an issue.

These categories were established with the help of the German HASOC dataset. For annotation in other languages, language-specific issues might exist, like language registers of different groups.

This paper aimed to draw attention to the difficulties in the annotation of hate speech and other offensive content. The found information can be used in the development of refined guidelines for future annotation projects. Moreover, we hope to support the notion of more transparency in annotation research in order to reach consensus. Further research should target the expansion of the established categories, and possibly find solution approaches for problematic annotation cases.

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Critical Thinking as a Crucial Skill in the Digital Era

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Abstract. The digital revolution has completely changed the way in which society is informed and communicated. Globalization and hyperlinking allow the "digital author" to reach an unlimited number of users. The popular online media, blogs, vlogs, podcasts, social networks and social media offer a wide range of news and analyses on social topics. Information literacy and critical thinking skills are of great importance for individuals in times of high prevalence of fake news, misinformation and pure lies in the digital environment. The article presents critical thinking and abilities to think creatively in the digital era that we all live in. The critical thinking is the art of analyzing, evaluate and predict the consequences of actions. It also helps to improve our worldview and can refine our thinking. The main idea is that critical thinking is a crucial skill nowadays because it trains minds to accept selectively information and choses only the right one. The problem with fake news is very important today and the ability to recognize the truth in the ocean of information should be trained. The authors describe the main characteristics of the critical and creative thinking and some strategies for applying for this type of thinking to problem-solving situations. It has been described how to structure an argument, judge the credibility of a source or make a decision. It will not be difficult to see how to do these things in many other contexts too. Everyone will be competitive if they develop their ability to come up with new ideas.

***Keywords*:** critical thinking, skills, digital era, fake news, strategies.

1 Introduction

The digital revolution is the most significant event in information dissemination since Gutenberg's printing press and arguably marks a much bigger shift in human communication.

In the space of 50 years, the digital world has grown to become crucial to the most of all functions of society. The revolution has proceeded at breakneck speed – literary everyone can easily reach and use technologies. Moreover, the revolution has not finished yet.

The new technologies effect on different areas of day-to-day life. Many kinds of devices and software can solve problems and may help people make the right decisions. Technology plays a prominent role in the healthcare system as in diagnoses, treatment, research and education. The digital revolution has also a profound effect on the library as all. The librarians should be not only a consultant but should have an active role in the education of their users. In the realm of academic libraries, user-centered approaches, outreach, and learning outcomes assessments, as well as other education and instructional technology skills, concepts, and techniques, became popular. The expansion of technology has also created different types of communication – informal networks which made use of email, listservs, news groups, chat, instant messaging, class discussion boards, and other Internet-based tools. Academic libraries can be digital, virtual and hybrid libraries, which present multiple digital collections.

2 Methodology

The article presents critical thinking and abilities to think creatively in the digital era that we all live in. The methodology for achieving the objective of the study and solving the set research tasks include the following specific methods: method of study and content analysis, comparative analysis; synthesis of the obtained information. An overview of the definitions of information literacy and fake news is important to be done as to be clarified the use of the scientific concepts in the article. The definitions of significant organizations, library associations, stakeholders and library and information experts who research and discuss the problems of information literacy and the new information environment are examined.

3 Results

3.1 Critical thinking

There are three ways that the public accepts the information. The first is to say that people are gullible and read, listen, look just like that, for no good reason and without any special claim to what they have been told. In other words – without any criticism. The second is for those who need an authoritative, informed mediator to tell them what important is, meaningful and good. The third refers to a sufficiently intelligent section of society that has the resources and skills to rethink things through for itself – critically, to find its own version of the truth.

Digitization is generally seen as a positive force but there are also worries about the effects of smartphones, video games and social media on our mental health.

News is available through an exponentially growing of digital and social media and this proliferation of sources, coupled with ease-to-access, like and share options, has enabled fake news to spread at an unprecedented rate. Therefore, it is important to ensure that today's society has the literacy skills they need to succeed and thrive in the digital environment. Creative and critical thinking are the key skills to identify untrusted sources and how to avoid reading them.

Creativity can be defined in different ways, involving cognitive processes, personality characteristics, and environment variables, as well as the interaction of these components. If we have to identify creativity, we can describe it as an original idea and combine it with the concept of processes that occur in specific stages of creative problem solving. However, creativity must combine with critical thinking.

The U.S. National Council for Excellence in Critical Thinking defines critical thinking as the:

Intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, or evaluating information gathered from, or generated by observation, experience, reflection, reasoning, or communication as a guide to belief and action [1].

Critical thinking is, in short, self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities and a commitment to overcome our native egocentrism and sociocentrism.

Richard W. Paul describes critical thinking as a movement in two waves. The "first wave" is often referred as a critical analysis that is clear, rational thinking involving critique [2]. In addition, Kerry Walters emphasizes that knowledge and mental modes can also affect the nature and success of people's creative problem-solving efforts, they are important variables to identify when attempting to understand the problem-solving process [3].

To be critical is to achieve one's goals in the most efficient way and intuition guides the suggestion of the solution. The importance of making connections through analogies and

metaphors is a lead characteristic of creative thinking but intellectual critical functions can also contribute to this process, as we observed. Intrinsic motivation is also a key issue to understanding the intensive energy that is present in the solving problem. It is an element of thinking circle, which disclosed how to be creative and effective at the same time.

According to Osborn-Parnes creative problem-solving model, remade in 2000 year by D. J. Treffinger, S. G. Isaksen and K. B. Dorval, our judgment includes stages that require decision-making on the course of action, considered critically [4].

3.2 Information literacy

The people are facing the large quantity of different information resources in their workspace, academic studies and personal day-to-day lives. All kinds of information is accessible through the World Wide Web, libraries, traditional and online media, special interest groups and organizations. The complexity of the offline and online information environment is increasing every minute, which implies the acquisition of new skills to work in this global information ecosystem. The unreliable quality and the extensive quantity of information require large challenges for society. An abundance of information by itself will not create a more informed citizen without the extra set of abilities needed to make effective use of the information [5].

The well-known definitions of information literacy (IL), proposed in 1989 by the American Library Association (ALA) [6], reads as follows:

Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information

Information literacy is common to all learning environments, to all types of education and to the various disciplines related to it. IL enables learners to master the content and expand their research, become more self-reliant and take greater control of their own learning. According to Information Literacy Competency Standards for Higher Education [5] information literate individuals should be able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one's knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the legal, economic, and social issues surrounding the use of information, and access and use information ethically and legally.

This definition is one of the most cited in the scientific literature and initiates the development of much of the information literacy standards that have a major impact on higher education globally.

The Information Literacy Group of the Chartered Institute of Library and Information Professionals (CILIP) in the United Kingdom adopts on 6 April 2018 a new definition of information literacy that applies to new realities and challenges of the digital age [7]. CILIP defines information literacy as "ability to think critically and make balanced judgments about any information that is found and used."

The Information Literacy Group state their position as follows:

> *Information literacy incorporates a set of skills and abilities that everyone needs to undertake information-related tasks; for instance, how to discover, access, interpret, analyze, manage, create, communicate, store and share information. Nevertheless, it is much more than that: it concerns the application of the competencies, attributes and confidence needed to make the best use of information and to interpret it judiciously. It*

incorporates critical thinking and awareness, and an understanding of both the ethical and political issues associated with using information. Information literacy relates to information in all its forms: not just print, but also digital content, data, images and the spoken word. Information literacy is associated and overlaps with other literacies, including specifically digital literacy, academic literacy and media literacy. It is not a stand-alone concept and is aligned with other areas of knowledge and understanding. Information literacy helps to understand the ethical and legal issues associated with the use of information, including privacy, data protection, freedom of information, open access/open data and intellectual property. Importantly, information literacy is empowering, and is an important contributor to democratic, inclusive, participatory societies; as interpreted by UNESCO, it is a universal human right. [7]

Information literacy enables citizens to gain in-depth views on various topics and express their views, thereby fully participating in society.

Information literacy relates to the ability to effectively use information in all formats of the information environment. Its main aim is to build the ability to synthesize and integrate information from different sources. These skills are related to building different competencies in identifying, gathering, planning, evaluating, managing and presenting the learning content. This not only leads to solving tasks related to learning but also to awareness of the different aspects (judicial, social, economic), related to using information, including ethical ones.

3.3 Fake news

Discussing the so-called “hot topic of the day,” the fake news, we have to be aware of the prerequisites which have led to the escalation of news and information of that kind. We are obliged to note that this phenomenon is not something new. It’s not a unique invention of the Internet and social media in the 21st century. The history of mankind is marked by a huge amount of so-called “fake news” or “fake stories.” The Israeli historian, philosopher and a professor in the Department of History at the Hebrew University of Jerusalem, said in his newest book “21 Lessons for the 21st century” that the authority of humans as a species (Nomo sapiens) depends on the creation of fairy tales, fictions, hoaxes, fabrications and their deep belief in them [8]. As early as the Stone Age, self-affirming myths served to unite human groups. For millennia, much of what has been called "news" and "facts" on people's social networks has been stories of miracles, angels, demons, witches and all kinds of monsters. There is no historical evidence of existing of Eva’s and the Eden, but millions of people all over the world believed in that story for many years. Millions of people still believe [8]. This is just an example and it is not intended to offend the religions and the religious people. The basic idea is that “fake news” is not something new and not always something bad. But the increasing Internet consumption in the world over the last decades is a major prerequisite for intensifying the generation and spread of fake news, which could harm us as a civilized society. We've all heard Joseph Goebbels' famous quote:

If you repeat a lie often enough, people will believe it, and you will even come to believe it yourself [8].

In fact, it has not been confirmed, he has ever written or said that. This is another example how a small but really popular quote could be unreliable and even called fake.

This is where the role of information literacy and the good practices and educational strategies for avoiding fake content, come into play.

3.4 Educational practices

Navigate project as a good example.

The Navigate project aims to stimulate students' active involvement in Information Literacy through research, experimentation, competition and cooperation.

By applying a game-based approach to IL training of Bachelor's students in Humanities in Europe, innovation can be brought into this field. The NAVIGATE project's use of digital games in IL training in university environment will provoke students' active involvement through research, experimentation, competition and cooperation. The traditional understanding of IL will be extended, as the training based on games adds the ability to collaborate in digital environments. The NAVIGATE project aims are to give the teachers/trainers the powerful support for using games in the IL courses [9].

There are other good definitions of information literacy and fake news made by the scholars from Bulgaria who are the coordinator of the international project NAVIGATE - Information Literacy: A Game-based learning approach for Avoiding Fake Content [https://www.navigateproject.eu/]. The definitions are discussed in the article.

Fake content is generated, disseminated and accumulated mostly for the purposes of religious and political propaganda, and its commercial use is mainly linked to the media sensations or commercial corporate aims. More often than not, fake content is generated and circulated involuntarily or for personal entertainment, so information is much more accessible and therefore the diversity of information sources is increasing. Spatial and time constraints on information transmission are easily overcome. Access to a variety of resources is not a problem for society, which is acquiring with ever-greater speed the necessary skills to work with them. The rate of increase of electronic disseminated information is many times higher than that of printed information. The popular online media, blogs, vlogs, podcasts, social networks and social media offer a wide range of news and analyses on social topics. Erasmus + NAVIGATE Project definition on fake content reads:

> *Fake content is content disseminated on purpose, involuntarily or for pleasure through the communication channels (verbally, through print or electronic media) without checking the authenticity of the facts and statements in it referring to tried and tested various and independent sources. Fake content is generated, disseminated and accumulated mostly for the purposes of religious and political propaganda, and its commercial use is mainly linked to the media sensations or commercial corporate aims. More often than not, fake content is generated and circulated involuntarily or for personal entertainment. Historically, fake content is related to self-deceit and biases referring to particular stages of the scientific development of human civilization. Fake news are false news stories, often of a sensational nature, created to be widely shared online for the purpose of generating ad revenue via web traffic or discrediting a public figure, political movement, company, etc. Fake news is also a concoction of alternative facts [10].*

The game-based learning model is a way to build critical thinking skills to identify and differentiate fake content that is generated, distributes and accumulates in the online space. The game-based approach to knowledge acquisition is extremely relevant because it helps students think more deeply about the information they find and the sources they can use in an online environment. Another important aspect of implementing the NAVIGATE approach to learning about IL is the transformation of the academic environment through the establishment of new teaching methods. These methods successfully include interactive games in the learning process. The games that will be developed by the project will help students to identify and recognize the original source of information, thus forming lasting and sustainable habits in building their information competences. [11].

To develop thinking circle we need certain knowledge about the world around us, the ability to evaluate and work on the global network – WWW and beyond (in real life), the effective use and adequate reading of facts, data, information and news are the things that give the norm, the limit of awareness among people in society. The quality of the information itself and the way it is presented to the audience are another essential part of the subject, the other side of the coin. It is important to be mentioned that along with information literacy, the public must have a critical view of the media and social networks in terms of their content, or, in other words, a high level of media and civic literacy.

4 Conclusion

Sociologist Scott Lash defines information in a technology-rich media environment with the words: "integration, nonlinearity, flow, space-time compression, distribution and real-time use" [12]. These characteristics are also present in the modern information society. The definition he uses for a modern society is interesting – a **misinformed information society**. According to him, the contradiction comes from the fact that information generated with a lot of knowledge and rationality spread uncontrollably and leads to unpredictable consequences. In other words, the initial message is distorted by "information irrationality" and does not always allow the author to control the nature of the information he submits. In the digital age, the boundaries between communicator and recipient come together in one – between creator and user of content, often roles being conditional and shared in the same object. Nowadays, everyone is both an author and a digital content user. That is why information literacy and critical thinking skills are of great importance for individuals in times of high prevalence of fake news, misinformation and pure lies in the digital environment.

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Electronic Content and the Intellectual Property in the New Communication Environment

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Abstract. The use of new information and communication technologies is changing both the public communication and the sharing of diverse content – text, graphics, multimedia, and that leads to changes in our understanding of the environment we are living in. Creating intellectual products through technologies is changing the way that copyrighted content is distributed, processed or archived. Through resources such as social networks, personal blogs, microblogs, webpages, and all other Internet platforms, everyone is a user of copyrighted content. As each of us is currently creating and distributing electronic content in the new communication environment, it is necessary to analyze basic guidelines regarding intellectual property and the use of copyrighted resources. To achieve this goal, the following research tasks have been fulfilled: the nature of electronic content and its species diversity is distinguished; an overview of the intellectual property objects representing electronic content is done. Conclusions have been made regarding the need for knowledge related to intellectual property and, in particular, copyright for electronic content in the new communication environment.

***Keywords*:** electronic content; intellectual property; copyright; Internet; communication environment.

"*Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production*." Article 27 (2) on authorship, Universal Declaration on Human Rights

1 Introduction

Today, more than ever, we realize that intellectual property is everywhere around us. Every click on the Internet, every song we listen, every movie we watch, is part of that intellectual creativity that provokes the appearance of intellectual property. Everyone is engaged in intellectual activity, and there are no further prerequisites for its pursuit other than the conscious human condition. As a whole, neither the illiteracy of one person nor his / her legal capacity is a problem for the performance of this kind of activity. In many cases, however, the legally protected well by intellectual property is not covered by the mental activity that led to its creation. Intellectual work is definitely embedded in a trademark – in the choice of colors, the design itself, objectification in a particular look, etc., but the mark as a subject of law does not represent the thoughts that led to the registration or the use of the mark in the commercial environment already. The organization of tomorrow – how the day will proceed, the compilation of shopping lists and other such intellectual activities – also require specific intellectual efforts, but they do not create tangible goods themselves and, respectively, no object of intellectual property is created.

Therefore, the object of intellectual property is not the intellectual activity itself, but its specific finished form. And the electronic environment made things even easier – now sharing

thoughts, songs, books, in online form is just that one click away. The new technological means, modern information technologies, telecommunication networks ensure the collection, processing and transmitting information in a global environment. On the other hand, these funds also help the electronic content to develop. Moreover, the protection of intellectual products requires respecting the conditions that the new communication environment offers.

2 Methodology

The main goal of this paper is to understand how the electronic content we all create today fits in the new communication environment, and mainly the objects of intellectual property that can be defined as e-content. In order to achieve that goal, we are going to make an overview of e-content; we will compare definitions of e-content and this way we will analyze what variety the e-content offers. Secondly, we will define the basics of intellectual property and the category of intellectual property that "meets" the electronic content.

The methodology for achieving the objective of the study and solving the set research tasks include the following specific methods: method of study and content analysis, comparative analysis; synthesis of the obtained information.

3 The electronic content and the new communication environment

The main driving forces in the transition to the information society; a society where knowledge is the highest ideal; a society that exists more and more in the digital world; are technological innovations, exponential growth and, above all, the differentiation of knowledge. In this society, electronic communication is becoming essential. However, this change is not sudden. Electronic space did not appear for a moment.

The Internet is a global telecommunications network, and as such, its main feature is to connect computers worldwide. It dates back to the late 1960s, when the U.S. Department of Defense developed a project that aimed to create a network that would connect military computer networks to other radio and / or satellite communications [1]. This newly created test network is called APRANet (Advanced Research Projects Agency Network) intended to serve the research of civilian and military institutes. Over time, the network was undergoing rapid growth, and in 1968, its first nodes, namely the University of California and later the Stanford University, were already a fact. APRANet was designed primarily to break down information into separate packets to send from computer to computer using different paths and, if necessary, has the ability to change paths of information to overcome interruption or failure in some parts of the system [2]. In order to send a message using the network, it is only necessary for the computer being the sender "to put" their data in a kind of envelope called the Internet Protocol, where the addresses of the sender and the recipient are recorded.

Thanks to APRANet, we are free to use this online space today, without any restrictions. This digital world is in the process of continuous development, and so new means of communication emerge. Communication is already at a different level. Geographic boundaries do not matter anymore and even the language barrier is no longer an obstacle. Using specific applications, all named and unnamed borders are simply blurred into the digital environment.

In 1990, the project ARPANet was closed and the mass development of civilian activity was already allowed. That is when Tim Berners-Lee launches the World Wide Web, which deploys the Internet to its true multimedia capabilities [1]. Today, the Internet is everywhere and this is thanks not only to computer networks but also to cable TVs, radio signals and more. In a very short time, the Internet has succeeded in changing the communication environment.

- Today, the Internet provides us with various information resources that include electronic publications such as books, newspapers, magazines, etc.;
- databases – whether full text, abstract, or other;
- social networks, forums, etc.;
- e-trade and many others.

These resources completely change the appearance of the communication environment, which from, traditional writing form, turns into a hybrid, with email and social networks already being a big part of our daily lives.

Since the Internet is built entirely on a voluntary basis and accordingly provides a field for expression, it has no owner in the traditional sense. There is no organizational unit that owns the computer network. Authorities exist only with coordination and purely information functions. Among such approved bodies is Internet Society (ISOC) where the technological standards of the network are being developed and approved, and its development is being studied. [2]

The Encyclopedia of PC Magazine defines e-content (electronic content) as digital content that can be transmitted over a computer network such as the Internet. The Oxford Dictionary defines as follows “digital text and images designed for display on webpages.” Based on these two definitions we can say and even extend that definition by setting the follow: e-content is the content that can be transmitted online, using the Internet and various devices connected in one network, sharing every object, that can be subject to intellectual property – audio, video, text.

Text creation has changed at the same time, but again it did not so much. It just evolves. In the original form of communication, with the help of pictograms, in the distant future with the help of manuscripts, through the typewriter, to today, when with the help of electronic devices, we are able to create text anywhere, neither time nor place matter.

Based on the above, according to species diversity electronic content includes

- video – incl. home videos, music videos, television shows, movies, etc. Video content is available through various platforms like YouTube, Vimeo, Hulu, CBS, CNN, FOX, where can be uploaded videos from an individual or from a company.
- audio – multiple audio files are available for listening through Spotify, Google Play, iTunes, etc.
- photos – sharing photos is another example of how you can distribute electronic content (examples are Flickr, Instagram, and Snapchat social networks).
- text – incl. various electronic publications (e-books, e-newspapers, e-magazines, newsgroups, forums).[3]

An electronic publication is a type of electronic content that is distributed through electronic media such as magnetic carriers information, optical disks, Internet. Posts can be distributed freely or for a fee. There are two forms – online publications and offline publications. There are no online publications objectified on some kind of carries but they are accessible on the global network, so they must be copied to hard drives, magnetic tapes or to be stored with other storage systems (Online). The second electronic publications are provided on a physical carrier and may be stored (Offline).

Depending on the access to the electronic content, it can be made via subscription (paid access) or freely (open access). Paid access is available on sites offering video or audio electronic content. Open access is available when users read electronic periodicals, use Internet forums, access to the web mapping, advertisements. E-content can also be used in training, with

mandatory registration in a specific platform providing access to the educational content in electronic form. [3]

4 Intellectual Property

We define intellectual property as a general concept of copyright, patent and other protected rights over the results of human creative activity. International treaties are essential for the establishment of intellectual property. With the World Intellectual Property Organization (WIPO) Convention, signed at Stockholm on 14 July 1967, intellectual property is finally and permanently anchored as a concept that refers to all the intangible results of human intellectual property protected by law.

Generally speaking, intellectual property legislation aims to protect artists and other creators of intellectual goods and services by giving them certain time-limited rights to control the use of such works. Rights are not valid for the physical object in which creation can be embodied, but for intellectual creation as such. Intellectual property, in general, can be divided into two main categories – "industrial property" and "copyright"[4].

Article 2 (viii) of the WIPO Convention provides that "intellectual property" shall include the rights relating to literary, artistic and scientific works; performances of performing artists, phonograms, and broadcasts; inventions in all fields of human endeavor; scientific discoveries; industrial designs; trademarks, service marks, and commercial names and designations; protection against unfair competition; and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.

The WIPO Convention sets the following merged groups of intellectual property objects:

- Objects of artistic and literary property with the legal equivalent of "copyright and related rights";
- Objects of industrial property with the legal equivalent of "patent, design, trademark, and competition law";
- New intellectual property objects, arising from the dynamics of human ingenuity, the development of new information and communication technologies, the improvement of biotechnology and the system of traditional human knowledge.

Table 1. Objects of intellectual property

Disks	Designs for objects	Geographical indications of origin for certain types of products
Performances	Images	Companies' names
Broadcasts	Logos	Industrial Processes
Videos	Trademarks	Chemical formulas
Computer games	Integrated circuits	Materials
Computer programs	Inventions	Perfumes

The objects referred to as literary, artistic and scientific works belong to the category "copyright" of intellectual property. Whereas the objects referred to as performances by artists and performers, sound recorders and radio and television broadcasts, are commonly referred to as "related rights," i.e., rights related to copyright. The objects referred to as inventions, designs, trademarks, trade names and designations are in the category of "industrial property" of intellectual property. [5] The subject matter of copyright protection covers any work in the field of literature and art, regardless of the type or form of the expression. However, in order for a work to benefit from copyright protection, it must be an original work. Accordingly, the ideas of a work are not so necessary to be new, but the form, whether in the field of art or the literature in which they are expressed, must be the original work of the author. Last but not least,

protection does not depend on the quality of the work or how valuable it is – the work created will still be an object to copyright, and no matter what the goal is, neither the purpose nor the way influence the protection of this work. [6]

Works subject to copyright protection should be original intellectual creations. In order for them to be placed under the protection of copyright laws, these works must come from the work of the author. The work is protected regardless of its quality, even in cases where it is not so directly related to literature, art or science, such as maps or drawings. Exceptions to the general rule are set out in copyright law.

The following types of works are subject to protection, namely

- literary works – novels, short stories, poems, travelogues, essays, and all forms of works, regardless of volume, form and whether they are published or not. In a significant number of countries, "oral" work is also subject to copyright protection;
- works of art – drawings, paintings, sculptors, images, regardless of form – two-dimensional or three-dimensional, neither of their content and purpose;
- musical works – songs, operas, musicals, regardless of the instruments by which they are recreated;
- cadastral maps and state topographic maps;
- architectural projects, schemes, plans and more related to the spatial planning;
- movies and other audiovisual works;
- computer programs.

There are also rights that can be defined as neighboring to copyright, which is why they are called related rights. Typically, these related rights are defined as – the rights of performers for their performance, the rights of record producers and the rights of broadcasting organizations. Related rights provide protection for those who assist intellectual creators in the dissemination of their works. [7], [8]

The Industrial property is a normative concept and the scope of this type of property can be determined by the Paris Convention for the Protection of Industrial Property. Article 1, paragraph 2 says that "the protection of industrial property has as its object patents, utility models, industrial designs, trademarks, service marks, trade names, indications of sources or appellations of origin, and the repression of unfair competition." And paragraph 3, within the same article, continues: "Industrial property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products, for example, wines, grain, tobacco leaf, fruit, cattle, minerals, mineral waters, beer, flowers, and flour." [9]

A major common feature of industrial property objects is the order that provides protection. Unlike works, for which it is sufficient for the creative result to be objectified, different administrative requirements must also be fulfilled in order for the objects to be subject to industrial property protection. With these objects, creativity is not a necessary prerequisite for granting protection. But this, in turn, does not preclude the recognition of the authorship of the intangible object when it exists, but that alone is not sufficient. There are also cases where the intangible object in question may not at all represent the result of creative or other intellectual activity, but may be an existing and widely used object by all, for example, the registration of a trademark which is a specific word. [10]

The criteria for granting protection are different for each of the industrial property objects, but the enforcement is entrusted only to the relevant national patent office.

The objects, protected by copyright, are more widely presented in the e-content. On a daily basis, the average user is using more text, audio and video, rather than patents.

5 Conclusion

In order for an intellectual property object to be found on the Internet, it must be digitized.

Meaning, a work, whether text, image or sound, has to become computer readable codes of 0 and 1, the so-called binary codes that are grouped into bits and bytes [6]. Content used in the online space is subject to the same principles as those created in the offline environment. The created electronic content is subject to intellectual property, as much as anything else. With the help of the Internet, exposing attempts at plagiarism is simply made easier. It takes one click and one search, even on Google, to see how much copyrighted content is offered. There are also a number of programs in which you simply copy not only text but also music, and get information on what percentage is the copyrighted content, and accordingly, what is the copied one. That's why the need for giving authorship of the creator of e-content is important and the role of protecting the electronic content will be even more important in the future.

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Ethics, Fake News and Information Professionals

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Abstract. The dissemination of fake news has grown rapidly in the digital era. Any type of information, whether it be true, false, biased, or misleading, can be spread easily through digital platforms. There are different methods and media for delivering information. Additionally, institutions or information professionals such as media, journalists, political parties, politicians or financial companies are constantly bombarded by fake news.
Fake News alters a reader's reality and as a consequence it is difficult to change their mind after they have read it. Information professionals have an opportunity to engage and educate communities through good practices based on using information literacy to fight false information. When archiving information or storing it in a library for the long term, professionals should follow a code of conduct to ensure they are providing objective information to patrons. However, this code of conduct is not just the responsibility of librarians or archivists, but should also apply to the creator of the original information.
There are ethical issues facing information professionals in regards to dissemination and information disorders. In this paper, we analyze cases of unethical information behavior in different fields. At the same time, we explore ethical codes of conduct for information professionals, in relation to the spread of fake news on digital platforms. In conclusion, this paper will provide guidelines to avoid behaviors that could lead to unethical behaviors in relation to information disorders.

***Keywords*:** fake news, librarians, information professionals, ethics, information disorder, professional ethics

1 Introduction

The dissemination of fake news generally involves one or more different goals for spreading false news. The first goal involves using news to damage someone's reputation with false, biased, or misleading information. Another is earning money through advertising based on clickbait techniques (Alvarez, 2017). These two examples show that fake news may have different uses and faces. The Internet, and social media in particular, allow the end user to easily and quickly disseminate any type of information in several different forms. Additionally, many institutions and information professionals such as members of the media, journalists, political parties, politicians or financial companies are constantly facing fake news. As literature shows, social media is heavily utilized by fake news. For example, a study in the United States showed that 55% of the population believed that false social media profiles are responsible for the spread of fake news (Richter, 2019).

Fake News tends to alter the reality of a story, and consequently it is difficult to change a receiver's mind once it has been altered. Fake News can provide a feeling of familiarity and truthfulness based on the illusory truth paradigm (Jackson, 2019). This sense of truthfulness enables the consumption of fake news. There are several motives for the creation and consumption of fake news. Some of the root causes of fake news include online communication, economic aspects (Blanco-Herrero & Arcila-Calderón, 2019), the lack of a centralized control mechanism for news consumption on social media platforms, and a decreasing trust of media (Budak, 2019). For instance, in Finland 59% of the population surveyed places trust in the media,

but in the United States only 32% seem to trust the news media, which is close to the levels of Slovakia (33%) or Malaysia (31%) (Watson, 2019a).

Bearing that in mind, it seems that the smaller budgets for traditional media to verify information and produce more rigorous work, together with a lack of online content control has enabled the spread of fake news.

In economic terms, fake news has a low cost of production and a high rate of dissemination because of how cheaply the content can be shared with millions of people (Khodabakhsh, Busch, & Ramachandra, 2018; Landon-Murray, Mujkic, & Nussbaum, 2019). Technology will continue to reduce the cost of creating and spreading fake news, and rapid advances in artificial intelligence (hereafter AI) will bring different and likely even faster approaches, effects, and form of content delivery. One example of this approach is the deep fakes, consisting of a modified video using AI.

This paper provides an overview of information disorder, unethical information, a discussion of the codes of conduct of information professionals and suggested guidelines to avoid unethical information behavior in relation to information disorder.

2 Information disorder, typologies and taxonomies of the fake news

Prior to discussing the different taxonomies proposed in literature, it seems necessary to discuss the meaning of information disorder and the role of fake news in it. Information disorder is the process of spreading false information with generally harmful consequences to the receiver who interprets the information.

Depending on the harm caused by the content, information disorder can encompass disinformation, misinformation and mal-information. Therefore, Fake News is part of information disorders, along with hoaxes, clickbait, bogus stories, and conspiracy theories. Thus, misinforming does not have the intention to harm (Sellnow, Parrish, & Semenas, 2019; Wardle & Derakhshan, 2017) while disinformation and mal-information have harmful intents.

Hoaxes, trolling, and propaganda are false or biased news that tends to deceive the reader. Contrarily, satire and humor, which create another genre of fake news, do not tend to deceive the reader (Verstraete, Bambauer, & Bambauer, 2017).

Some authors suggest that it is difficult to make concrete taxonomies for fake news, but there are some attempts, such as a taxonomy for varieties of ignorance: ignorance per se, disinformation, misinformation, missing information, self-deception or bad faith and dominant forms of calumny doxing and fake news (Froehlich, 2017). Another study suggested another taxonomy based on characterizing the source where fake news is disclosed, anonymous and bogus (Berghel, 2017). Multimedia content could have its own taxonomy of the different impersonation technologies and be divided into physical and digital (Khodabakhsh et al., 2018).

3 Unethical information behavior in different fields

Information use can be viewed according to what is considered unethical behavior. For instance, when comparing the use of information in two popular cases, WikiLeaks or the Donald Trump 2016 election, there is likely to be an agreement that both cases involve unethical behavior: even though these are two completely different cases involving information management, they both involve politics.

Unethical information behavior not only exists in news, but also in politics, science, economics and in the financial industry.

In the case of political economy, a study used game-theory political economy models and concluded that citizens might lose welfare when making economic choices based on misleading

information. Hiding information from citizens seems to lead to less access to welfare. Therefore, the risk of decreasing welfare also exists when there is a need to detect misleading information to prevent political decisions (Bullock, Mittenzwei, & Josling, 2019).

There are several known cases around the world in relation to scientific fields where information is misleading or biased, causing problems later to not only the creator's credibility, but also to the publisher's. For instance, in recent years in Spain, more than 1280 researchers were retracted by misconduct relating to their research (Abril-Ruiz, 2019). It is also possible to find a more accurate number of authors in the retraction databases from other countries (http://retractiondatabase.org/). There are also well-known cases relating to individual authors or research groups. For instance, in the field of diabetes research, after a principal investigator died, her colleagues published a paper of her research, but published manipulated data. (Schneider, 2018a). A genetics researcher was found to have published several papers manipulating data (Schneider, 2018b). There is pressure on researchers to publish scientific papers in order to obtain funding. Consequently, researchers might risk their professional careers by manipulating research data, which is a misinformation problem, even with a peer-reviewed process as is used in academia. Thus, the peer-review system in academia seems to be a good gatekeeper but it is likely not enough and should be improved.

Manipulating data in experiments or labs may have a risk that research cannot be repeated in similar conditions. Another question is the credibility of the scientist or the group of scientists who have published the data. However, this does not always lead to the spread of confusion. In the case of health emergencies, two social networking sites (hereafter SNS), Twitter and Sina Weibo, were analyzed and it was found that misinformation about Ebola was at a very low level (Fung et al., 2016).

In banking, financial misinformation was and is likely to be common in most countries. For instance, a study in Chile showed that users placed more trust in banking misinformation practices, even when social movement organizations provided counter information against these practices (Guzman, 2015). In another study it was found that when disseminating misleading information through media, it was not possible to show a price discovery process in capital markets (Kyung & Marquardt, 2018).

In some cases, it is possible to verify information through fact-checking tools, repeating experiments in the case of science, and with other techniques. It is more difficult when false information appears in places where is difficult to verify it, such as TV programs. For instance, in Spain a news TV program showed a false poster for Tsunami Democratic, the political platform which stands for the Catalonian Independence (Buesa, 2019, Tsunami Democratic, 2019, Vilaweb, 2019). In Catalonia and likely in Spain, it is well known by both those in favor of independence and those opposed that messages from this platform are spread from its official Telegram channel followed by more 400,000 people. This type of unethical use of information tends to discredit the Catalonian independence movement. The same platform dismissed the news and a fact-checking platform, too (Maldito Bulo, 2019).

4 Codes of conduct of information professionals

Information professionals have codes of conduct. For instance, the International Federation of Libraries Association (IFLA) outlines the importance of neutrality in access to information guidelines:

Access to information: "*Librarians and other information workers reject the denial and restriction of access to information and ideas most particularly through censorship whether by states, governments, or religious or civil society institutions.*" (IFLA, 2016).

This statement relates not only to censorship, but also to freedom of information or intellectual freedom. The American Librarian Association (hereafter ALA) expresses similar ideas in their ethics code for the library professionals (ALA, 2017). In addition, the Association for Information Science and Technology (hereafter ASIS&T) professional guidelines state that "*To resist all forms of censorship, inappropriate selection and acquisitions policies, and biases in information selection, provision and dissemination*" (ASSIS&T, 1992). The increase of censorship leads to decreased access to information, but under some circumstances, some subsets of citizens may learn to evade censorship, especially government censorship to access information (Hobbs & Roberts, 2018). In the long term, it is likely that some fake news will be archived, for research purposes. According to the guidelines above, information professionals would provide any requested information to their users, even when this information is false, along with advice about the original of the information.

Neutrality: "*Librarians and other information workers are strictly committed to neutrality and an unbiased stance regarding collection, access and service*." (IFLA, 2016)

In the Fake News context, information professionals have the difficult task of offering information that may be biased, misleading or maybe ignored. Information professionals are not always neutral since they shape information for users and some sources of information, such as those from minorities, political dissenters, or ethnic groups are avoided (Gibson et al., 2017). In addition, since fake news may affect net neutrality, users' behavior may change and the dismantling of the net neutrality makes it challenging to ensure that there is equal access to resources for citizens at risk, as well as for information professionals (Adams & Harris, 2018). Internet service providers may not only decide to slow down traffic from certain sources, but may also only permit content in agreement with certain political views. This would be controversial for information professionals, as they avoid providing erroneous or misleading information and promote equal access to information (ASSIS&T, 1992).

Journalists, another information professional who deliver content, also have a code of conduct. The code of ethics of the Society for Professional Journalists highlights the fact that journalists' work must be accurate, verifying and correcting information when necessary (Society of Professional Journalists, 2014). These statements are in contrast with the fact that 44% of the worldwide population surveyed had detected fake news in print media. In the case of Turkey, 72% of printed media, and in the United States 47% of printed media news are considered fake News (Watson, 2019b). In addition, 28% of the population of the United States who were surveyed said that they believe that CNN are spreading disinformation and 30% believe Fox News is doing the same (Ricther, 2019).

5 Guidelines to Avoid Unethical Information Behavior

As mentioned, users are constantly exposed to these three types of information disorders. Information in the form of text, images, audio or video may contain biased information. In fact, fake News affects all countries across all scenarios such as economy, health, politics, employment and business, among others. To survive in the face of this unethical information behavior, users and information professionals have technological and educational solutions.

In terms of technological solutions, there are different useful strategies especially when this information come from a source, anonymous or not. One of these strategies, and likely the most used, is the use of fact-checking or reverse image search tools to detect this sort of false information. The main issue is that this strategy is done "in past tense" when the harm is likely already done.

Moreover, in extreme cases where emotions play an important role, such as religion, politics or activism, this is likely not possible. For instance, in the days leading up to the Catalan

Referendum in October 2017, thousands of messages were spread on WhatsApp groups and online forums. Some of these messages were credited to famous people or reputed professionals who were in favor of or against the independence process. However, some of them were false (Rubio, 2017). It is very difficult for users to verify this information if the person or organization involved has not really denied or approved, in most cases publicly, this information. In countries like India, the government shuts down not only the websites which spread misinformation online, but it also blocks Internet access to citizens, as in the case of Kashmir in 2017. However, this is a costly solution because of a negative influence on the economy caused by the blocking of access, leading to loss of money and business competitiveness (Kaur et al., 2018).

Other solutions proposed include the use of an AI process (Granik and Mesuyra, 2017). However, this sort of solution is not generalized to all SNS, is experimental, and needs to be studied and developed in more depth.

In relation to educational solutions, most authors are in favor of improving the information literacy skills of users. This enables users to be critical about the type of content they are viewing, along with its source, the evidence, interpretation, completeness and knowledge (Houtman & Wall, 2019; Rosenstiel, 2013). A study proposed a theoretical framework based on three phases: pre-contribution, during contributions and post-contributions, particularly addressed to the gallery, library, archive and museum (hereafter GLAM) sectors (Qutab, Myers, & Gardner, 2019). Therefore, this sort of solution is most useful when information is within the realm of information professionals, ideally in a closed environment.

Information literacy reinforcement programs have been adapted to current times, also emphasizing the importance of the information selection process (LopezBorrull, Vives-Gràcia, & Badell, 2018). In this way, users are trained by information professionals to distinguish false information. Otherwise, misleading or false information can be disseminated and, even worse, the user manipulated. For instance, at Stanford University, information literacy is a classroom priority using disciplinespecific examples, reviewing fake news and propaganda and demonstrating that it affects all subject areas (Benson, 2019).

To users, before sharing information it is important to verify it. Ideally, this process should be automatic and preferably transparent. This is also the credibility and reputational issue. Users who share checked and verified information are more likely to be reliable. However, Asian countries such as Japan, Singapore or South Korea do not have easy methods to verify information as there is not an established media practice or there is not enough solutions (Kaur et al., 2018).

The issue to the user arises when this information is from an official channel that is supposed to be trustworthy, such as a newspaper or a TV channel. Thus, the solution currently seems difficult to find whether it be by technical or manual means.

Without a unique solution to avoid unethical information behavior, information professionals have to reinforce information and media literacy among users so that they can readily spot misinformation, but media also have an obligation to work ethically.

6 Discussion

The spread of fake news has social implications and its influence on the economy, politics, culture or welfare is bigger than we may think. There are no easy solutions for spotting Fake News and inoculating against it as we do for viruses (Cook et al., 2017), could work in certain fields or situations, but not in all of them.

Information disorder is not an involuntary act. There are intent and planning behind the spread of false news. The term planning refers to a well-thought-out strategy to change user

perception. This perception can be a calm reaction, such as to change someone's opinion about a topic, but it can also be violent, such as in the area of religion, which can be extreme. Therefore, different types of Fake News can be used in the publishing context, not just the spread of false information, but other types including hoaxes, trolling, or propaganda, used individually or as part of a mixed strategy. In relation to that, I think that information literacy is not the complete solution to detect the dissemination of false news, but the use of technology is essential to mitigate the harms and other side effects of Fake News (Leetaru, 2019).

Once false news is spread, the harm is done and it is very difficult to use countermeasures with a similar impact. The financial investment required to combat the harm of false news has not been quantified, but it is certain that it would not be the same amount of money as the creation, production and spread of false information, but I believe it would certainly be more. In Reuters Digital Report 2018 (Reuters Institute, 2018) it was suggested that government interventions are expected in European and Asian countries, but I think that legislative measures would not have a real dissuasive effect, even with economic punishment. Thus, some governments and lobbyists worldwide use false news for their own benefit. One example is the case of Brexit (Tatterstall, 2018). This is one of the contradictions of the initiative to spot the Fake News effect through legislative initiatives.

The information professionals' code of conduct enables them to be a reliable source in offering training about information literacy to users, and also when curating content to provide reliable information to users. However, information professionals may also need the support of other professionals such as scientists or lawyers to evaluate information misconduct.

Finally, another question to consider is training in information literacy. Information literacy offers what ethics cannot offer such as sources' selection and evaluation. Therefore, training in media or information literacy not only needs content curation strategies but an ethics side. In addition, false news can be part of the worldwide indicators of education. Measuring the information literacy of a country would likely also involve measuring their level of education. It is likely that the PISA test could measure information literacy levels as an indicator. PISA indicators measure levels of reading and understanding, among other performance indicators (OECD 2016) and information literacy. Given that fake news is a global problem, it is possible that creating indicators with the PISA test could help to understand this urgency and minimize risks.

7 Conclusion

The rise of Fake News has led to new research areas for information professionals, including ethics, trustworthiness, information selection and content curation. Moreover, as technology continues to evolve, it is likely that new varieties of fake news will appear.

As mentioned previously, fake news has a low barrier to entry in terms of cost and ease of production, so it is very easy to spread. Anyone with harmful intent, whether physical or psychological, has the power to modify users' behavior. This can have an impact on economics, science and business, among others. In addition, the neutrality of the Internet is also affected since users generally do not have other information sources, especially in areas where Internet connections may be limited.

It seems logical that information professionals' codes of conduct do not fully prevent the spread of fake news. However, librarians, archivists, documentalists and other educational professionals have a unique opportunity to engage users to reinforce information literacy. Helping users to avoid fake news is not an easy matter, but with the right tools at their disposal, they would be better informed and able to use good judgment.

Future research areas could include the influence of fake news in education and information literacy programs.

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Fake News and the Ethics of Censorship

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Abstract. While it is important for information professionals to protect all information, even topics they may morally or politically disagree with, what about misinformation? Do we protect access to "fake news"? Considering information is rapidly spread via social media and accepted as truth, should we protect people's right to have access even if we know it to be false? These questions were posed to me by an information student this semester and in this presentation, I will attempt to address them. All information professionals strive to teach individuals how to determine real news from fake news, however, this can be difficult due to several factors such as propaganda (all nations use propaganda); criminal activity (scams); and general societal misinformation such as advertising and libel (notably political candidates). Fake news isn't always obviously fake. In fact, the most successful fake news will always look realistically plausible. The ethical dilemma in this situation is that the information professional is making the decision on validity based on their own assumptions. Potentially, all information is useful to some prospective researcher. Many countries currently archive fake news for historical purposes. Years from now, this information could be instrumental to someone interested in contemporary daily life, socially, politically and culturally. To purposely destroy information is an act of censorship and our profession vehemently opposes censorship in any form, therefore, we should provide as much information as possible that allows present and future generations the ability to make up their own minds about the validity of its content.

***Keywords*:** misinformation, fake news, censorship, social media, intellectual freedom

1 Purpose

The purpose this research paper is to discuss the global issue of fake news and misinformation in our society and the ethics of censoring information when the information professional knows it to be false. Specifically, it focuses on whether misinformation should be preserved for posterity and what type of labeling would be assigned to this information.

2 Background

As an instructor of the Introduction to the Information Professions in Wayne State University's School of Information Science in Detroit, Michigan I was asked by a student during the Spring/ Summer 2019 course:

While it is important for information professionals to protect all information, even topics they may morally or politically disagree with, what about misinformation? Are we required to protect access to fake news? Considering information is being rapidly spread via social media and accepted as truth, are we required to protect peoples' right to have access to that? I feel like the answer is yes, but as beacons of knowledge and information it feels so contrary. (INF 6010, 2019.)

In reply to these questions, I thought about the ethics of censoring information and the right of intellectual freedom that Americans and public libraries hold so dear to our information

professions but also of the consequences fake information can have in society and in the interference of democracy. This paper explores those questions.

3 Methodology

This presentation will have a brief overview of the evolution of misinformation from printed format to the unfettered format of instant electronic dissemination of unverified information. It will include an introduction of the most common types of misinformation of the past and present such as propaganda, criminal activity, advertising and political slander/ defamation. A short history of some of the direst consequences of fake news and a discussion of the importance of educating individuals in how to critically assess the validity of information will also be included along with an assessment of the use of misinformation in historical research. Three examples of research and the collection of information, both factual and non-factual, will be discussed: The National Trove Archives of the National Library of Australia; The Open Media and Information Lab (OMILab) of The National Library of Israel; and the Marion Stokes Project of the United States.

4 History of Misinformation

Misinformation/fake news is nothing new, false documents date back to ancient times. For example, in 1275 BCE, Egyptian Pharaoh Rameses the Great commissioned false accounts of the Battle of Qadesh, one of the most famous battles of the ancient world. Rameses II is depicted as gloriously victorious in these accounts although Columbia University history professor Marc Van De Mieroop reports that "most historians regard Rameses's claims of a great victory with some skepticism and argue that the battle was a draw at best" (McQueen, 2018, p. 15).

The first technological advancement of mass misinformation occurred with the invention of Johannes Gutenberg's printing press. News could be spread to the masses by anyone with the means to publish their thoughts and as each generation become more literate, news became increasingly profitable. As more and more entrepreneurs entered the publication business it became increasingly competitive with daily papers using embellished headlines to melodramatic stories to sell their publications. As early as 1835, exaggeration, a style of journalism using headlines and subject matter designed specifically to excite or entice the public eventually evolved into tabloid papers known exclusively for fabricated stories. It was not a crime to publish stories that were not verifiably accurate, as long as there was a minimal element of truth to some aspect of the writing, it was assumed the general public could reasonably determine the validity of the overall subject content. In an effort to elevate the journalism career, in 1892, Joseph Pulitzer, offered to fund the world's first school of journalism at Columbia University in New York City. The Columbia University Graduate School of Journalism was established in 1912 and the Pulitzer prizes in journalism were established in 1917. As the profession evolved, codes of ethics were formed through the industry condemning fake illustrations, fake interviews, and fake news dispatches (McQueen, 2018, p.28).

In the 20th century, sensationalistic publications were still popular but there existed adherence to professional journalism ethics that enabled the general public to effortlessly discern the validity of most outrageous stories. In the last thirty years, with the professional manipulation of images and the influx of personal accounts such as blogs, Instagram, Facebook, Twitter, podcasts, and webpages, it is especially problematic to monitor information posted on the Internet. There are no longer any checks and balances on information and it is getting increasingly hard to determine what is true and what is fabricated; fake news is not obviously fake. In fact, the most successful fake news will always look realistically plausible. Individuals

fabricate information for a variety of reasons such as financial gain, political gain, or just to cause civil unrest but for whatever reason, it can undeniably be lucrative. Individuals who create and disseminate fake news can make thousands of dollars profit in advertising revenue – each click can be money in their pocket (Agosta, 2018, p. 6).

4.1 False Advertisement

Misinformation in advertising is a social tool that often leads to huge financial gains to the manufacturer but can result in huge financial penalties if caught. The U.S. Federal Trade Commission enforces truth-in-advertising laws. "When consumers see or hear an advertisement, whether it's on the Internet, radio or television, or anywhere else, federal law says that ad must be truthful, not misleading, and, when appropriate, backed by scientific evidence" (Federal Trade Commission, 2019). There have been several false advertising scandals with multi-million dollar fines and damaged reputations, but even large fines do not discourage this type of misinformation.

In 2008, Dannon claimed their Activia yogurts were "clinically" and "scientifically" proven to boost your immune system and able to help regulate digestion. The company was unable to prove this data and consequently fined $45 million along with orders to remove "clinically" and "scientifically proven" from its labels (Mcmullen, 2010).

Volkswagen falsely advertised environmentally friendly diesel cars in 2016, but the Federal Trade Commission (FTC) alleged that 'Volkswagen deceived consumers by selling or leasing more than 550,000 diesel cars based on false claims that the cars were low emission environmentally friendly.' Apparently, in 2015, reports claimed that Volkswagen had been cheating emissions tests on its diesel cars in the U.S. for the past seven years (Bartlett, Naranjo, and Plungis, 2017).

4.2 Propaganda

All countries use propaganda to some extent. Simply put, it is the spreading of news, whether true or false, to support an objective. It is a method of persuasion and can be tremendously effective. All wars seem to use propaganda to rally their forces. One need only look at propaganda posters from various wars to comprehend the messages of national pride and sacrifice; however, it is not limited to wartime. Propaganda, combined with censorship, can be used to persuade a nation to think negatively about a country, race, ethnicity or social group. Propaganda posters are an excellent example of archival materials that display a social, political or cultural moment in time though graphic art.

4.3 Internet Fraud

Internet fraud or scams as the public commonly refers to them are dangerously on the rise. According to the Federal Bureau of Investigation: "Internet fraud is the use of Internet services or software with Internet access to defraud victims or to otherwise take advantage of them. Internet crime schemes steal millions of dollars each year from victims and continue to plague the Internet through various methods including data breaches, Email Account compromise (EAC), malware/scareware and phishing/ spoofing to name a few" (Federal Bureau of Investigation 2019).

Fake news has three main effects according to Steven Seidenberg. First, it fools some people, causing them to believe in falsehoods; secondly, it makes individuals uncertain about what facts to believe and which sources of information to trust. The third effect of fake news is that it widens the nations' partisan divide, inflaming people's fears and hatreds. Fake news creates a

vicious circle. It strokes partisan divisions, which in turn leads individuals to believe only news that supports their views, which further heightens partisan division (Seidenberg, 2017).

4.4 Political misinformation

Currently in the United States, fake news is an integral component of our political campaigns and a serious threat to American democracy. During the 2016 election, fake news was more prevalent on social media than genuine news. According to a Pew Research study in 2017, "Over 62% of Americans receive their news from social media" (Grieco, 2017). Some interesting statistics found in another study conducted by the Pew Research Center in February 2018, *Social Media Factsheet* revealed:

> *As of early 2018, nearly 90 percent of U.S. citizens regularly go online. Over three-quarters (77%) own a smartphone, and almost three-quarters (73%) have broadband service at home. Among all U.S. adults, online users or not, 69 percent use some type of social media, with 86 percent of U.S. adults ages 18-29 using social media. Facebook is still by far the most popular social network in the United States, with 68 percent of U.S. adults using it in 2018. The next popular are Instagram (35%), Pinterest (29%), Snapchat (27%) and LinkedIn (25%). (Pew Research Center, 2019)*

Detrimentally, it is not just the fact that Americans are using multiple devices; it is the alarming amount of time they are spending on them. Cable News Network (CNN) reporter Jacqueline Howard reports, "Tallying up all screen media (computers, cell phones, TV, tablets, etc.) together, the average U.S. adult spends over 10 hours a day looking at screens" (Howard, 2016).

With all this technology, users appear to have more interest in the convenience of the content rather its validity. Liking and sharing content reinforces their beliefs and prejudices whether the information is true or false and there have been dire consequences of individuals acting irrationally over misinformation. According to Karen Douglas, et al., "already sociologists and psychologists are considering the impact of fake news on what people say and do, studying it as a catalyst for radicalized and extremist behavior" (2017).

One consequence of social media misinformation occurred when a fake news story (and the comments people attached to it) moved one man to shoot up a pizzeria because he believed a fake news post that reported the pizzeria contained a hidden pedophilia trafficking ring in the basement led by Hillary Clinton and her presidential campaign. The man responsible for the shooting, Edgar Welch, walked into the pizzeria and fired shots nearly killing several innocent people (Grieco, 2017).

5 Intellectual Freedom

Intellectual freedom is the "right of every individual to both seek and receive information from all points of view without restriction. It provides free access to all expressions of ideas through which any and all sides of a question, cause or movement can be explored" (American Library Association, 2019). To clarify, it means that all individuals have the right to all information and the ability to decide for themselves what they choose to believe or reject. This right to receive information and explore ideas is derived from the First Amendment to the United States Constitution. The First Amendment protects individual's right to freedom of speech and includes the right to access information, including information that is proven to be false.

Intellectual freedom is a crucial component to a democratic society and information professions characteristically reject any type of censorship. Shannon Oltman states, "the difficulty arises when we consider misinformation or fake news; intellectual freedom dictates that we cannot

automatically reject such sources" (2018, p. 74). This dichotomy results in an inward struggle to remove inaccurate information to prevent tragic consequences of misinformation.

6 Current archival practices

6.1 National Library of Australia: Trove

Trove is an online service created in 2008 by the National Library of Australia (NLA) offering free public access to a wide range of information, including historical and contemporary materials. According to the NLA website:

> *Trove contains digital reproductions of newspapers, journals, books, maps, personal papers, as well as archived websites and other born-digital content. It also brings together records and digitised content from libraries, museums, galleries, universities, archives, data repositories and other research and collecting organisations around Australia.*
>
> *Today Trove is transformed, growing far beyond its original purpose and becoming many things to many people: a community, a set of services, an aggregation of metadata, and a growing repository of full-text digital resources. Trove is a platform on which new knowledge is being built. It is a collaboration between the National Library, Australia's State and Territory libraries and hundreds of cultural and research institutions around Australia, working together to create a legacy of Australia's knowledge for now and into the future. (National Library of Australia, 2019)*

6.2 National Library of Israel

The National Library of Israel is currently in the process of digitizing as much information as possible. Currently they have 20 years of accessible Internet archives. According to *The Librarians* blog on the National Library of Israel website:

> *It is important to recognize that the Internet of today will be crucial in giving future researchers and historians a glimpse into our present, an understanding of what the world looked like, how the political atmosphere impacted society, what daily life included, how people behaved and how civilization operated. As information is deleted or removed from the Internet a significant part of history and future research goes along with it. In archiving the web, we can retain and appreciate an entire generation's way of thinking and existence. Without these efforts, we lose that piece of history – the art, the photos, the videos, and the overall experiences of the human collective. By archiving the web, by looking at the past and recognizing its significance, we open the door to societal progress and a greater historical appreciation. (National Library of Israel)*

6.3 Marion Stokes

Marion Stokes was a United States citizen, communist and uncompromising activist. In 1979 during the Iranian Hostage Crisis at the beginning of the 24-hour television news coverage, she started recording the four major news stations of the United States uninterrupted 24 hours a day, seven days a week until her death on December 14, 2012. Over thirty years, her 70,000 VHS capture revolutions, lies, triumphs, catastrophes, bloopers, talk shows and commercials that tell us who we were, and show how television shaped the world of today.

In 2013, her recordings were acquired by the Internet Archive and synthesized into the documentary *Recorder: The Marion* Stokes *Project* directed by Matt Wolf. It premiered at the 2019 Tribeca Film Festival. Stokes believed that by preserving the past with her tapes, she could illustrate patterns and details that give insight into what to expect from society, politics and the media. “In this era of so-called fake news, Marion [Stokes]'s project has a kind of enhanced urgency because it's clearer and clearer that public opinion is being shaped by the predilections of those who produce the news,” Wolf says, “and furthermore, who produce history.” History repeats itself, he says, so the collection is as much about the past as it is about the future.

7 Ethics

When all news in a collection, factual and proven false, is archived should the archivist tag or label the information as misinformation? The ethical dilemma in this situation is that the information professional is making the decision of validity based on their own assumptions.

Ethical decisions are naturally influenced by an individual’s code of ethics and is often shaped by their personal background, prejudices and beliefs. It is often hard to separate moral obligations from personal biases. This inherently influences the censorship process.

Corrie Commisso claims archivists must provide the necessary context for future researchers to make sense of the information which is a serious semantic challenge (2017). As information professionals we can provide the tools needed for an individual to discern for themselves the validity of an information source. We can educate them in the process of validation, and we can refer them to fact-checking resources. The First Amendment of the United States Constitution constrains government action which would limit freedom of speech. Consequently, education is the primary source of determining real from fake news (Seidenberg, 2017).

According to Steven Seidenberg, Europe has a fact checking collective of 37 organizations including the BBC, International Business Times, Bloomberg, LeMonde and Agence FrancePresse. In the wake of the 2016 presidential election postings of fake news on Facebook the United States has taken measures to require online platforms such as Facebook and Google to keep copies of ads. Make them public and keep tabs on who is paying – and how much (Poynter, 2019). The media is asking individuals to investigate news stories on Facebook and other social media sites by searching the title on a few mainstream news sites such as ABC News, the Associated Press, FactCheck.org, Politifact, and Snopes before forwarded any news story that has the following criteria: makes an outrageous claim; has an intensely partisan slant, links to an article where the headline does not match the content and uses quotes out of context. Apparently, theses news sources have agreed to contact Facebook and have fake news posts immediately deleted (Fake news, 2017, p.8). It is a start and hopefully many fake stories will be removed by these practices before there are any consequences from publication.

8 Findings

The topic of fake news and misinformation is discussed daily in all media formats in the United States today as we gear up for the 2020 election. The constant barrage of allegations and accusations is exhausting and makes it nearly impossible to take anything at face value. As a nation, to protect our First Amendment rights we must combat fake news by educating individuals in the process of effectively and independently evaluating information sources. Purposely destroying information is an act of censorship and the information profession vehemently opposes censorship in any form, therefore, we should provide as much information as possible that allows present and future generations the ability to make up their own minds about the validity.

Potentially, all information is useful to some prospective researcher. Many countries including Australia and Israel currently archive fake news for historical purposes. Years from now, this information could be instrumental to someone interested in contemporary daily life, socially, politically and culturally. Historical researchers and sociologists use archived information to understand cause and effect. The Marion Stokes Project exemplifies that as a collective body of individuals we are subjectively influenced and persuaded by what we see on daily television whether we realize it or not. Misinformation can play an integral role in societal response to situations. Access to this misinformation and its consequences can help researchers prevent similar instances from occurring, however, it should be tagged as misinformation/ fake news to allow the researcher the knowledge that it has been documented as false information. History does not have to repeat itself, we can study misinformation and the effects it has on global populations, using our past to make a better future.

9 Conclusion

In conclusion, here is the answer I sent to the student in response to her initial questions:
Nancy Steffes May 24 at 11:28am

> *What an ethical problem misinformation is! I have no right or wrong answer to this question so I will give you my personal views on this topic. I think all information professions hope to teach individuals how to determine real news from fake news so that they can choose for themselves what is true and untrue. Unfortunately, it's not that easy to determine misinformation due to a number of factors such as propaganda (all nations use propaganda); criminal activity (scams); and general misinformation in our society such as advertising and libel (especially political candidates). So, in that respect, yes, everyone has a right to believe in what they choose and as information professionals we should allow them to decide for themselves what is true or untrue. Additionally, all information is valuable to some researcher. Many countries are archiving webpages for historical reasons. Years from now, this information will be valuable to someone to get an idea of daily life socially, politically and culturally. To purposely destroy information would be censoring and our profession vehemently opposes censorship in any form so the bottom line is we should allow individuals to make up their own mind about the validity of information.*

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Fake news – predatory (fake?) journals: misdirections in scientometry

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Abstract. Fake news is not a new concept. It has a long history, but nowadays it is spreading with an unprecedented speed due to the availability of digital devices and the widespread use of social media platforms. Fake news being present in many areas of life, it did not avoid the scientific world either. Parallel with the appearance of Open Access, predatory journals – that could also be referred to as „fake journals" – have also made their pseudoscientific appearance in the world of science. The goal of such journals in recruiting manuscripts for publications is purely profit-oriented – a profit to be gained through deception.
The following questions arise:
1. How does the Hungarian Academy of Sciences relate to this problematic, considering the present scientometric requirements?
2. What are the measures the Academy itself can apply in order to protect the authenticity of science?
3. Furthermore, how is it possible that such measures of the Academy (e.g., scientometry) can themselves add to the misdirections that predatory journals generate?
The present study will be devoted to these issues, after providing a brief theoretical background, and a description of the present Hungarian situation as well as introducing and analyzing the nature of predatory journals, their main characteristic features, in a much more detailed fashion (publishing price, peer review process, fast publishing timelines, false impact factors, etc.). As for methodology, an ongoing empirical survey will be used, based on a questionnaire which investigates how Hungarian higher-education researchers relate to the above issues.

***Keywords*:** scientometry, predatory journals, Open Access, scientific information

1 Introduction

At first glance, predatory journals and fake news may seem distant concepts. While the former is seen as a parasite of the scientific world, the latter was a pre-existing term that began to gain ground with the advent of the mass media. At the same time, they have several points of contact, one to mention is that the disclosure of false or fake information is particularly true for both activities, and it is carried out for the sake of profit. Thus, predatory journals can even be considered a form of fake news. Nowadays, in the age of digital content, a great deal of information can be found on the World Wide Web, but the quality of this information varies widely. From fake news through authoritative dissertations to high-quality scientific content, users have access to anything. Reliability applies not only to scientific content but also to fake news that influences everyday life. In my work, I deal with the evolution of open access and the presentation of predatory journals that increasingly undermine the credibility of the scientific world. The latter is subject to the strict scientometric requirements researchers need to meet, which are also part of my study. In the second half of my paper, I will present in detail, my ongoing large-scale survey conducted among Hungarian University professors.

2 Open Access

Open access (OA) refers to free, unrestricted online access to research outputs such as journal articles and books. OA content is open to all, with no access fees. The emergence of open access is the result of a long process in which several important stages can be highlighted. The first stage was the serial crisis that emerged in the 1970s, as a result of which journals were becoming so expensive that libraries had to cancel their subscriptions, which meant that fewer researchers were getting the latest scientific results. As a result, the dynamics of scientific development slowed down. The World Wide Web created by Tim Berners-Lee offered a solution to this problem. However, the WWW did not provide a complete solution system, but only a framework for it. An important milestone of the OA initiative was the 2001 BOIA (Budapest Open Access Initiative), which highlighted two important elements. One is the importance of self-archiving, which is most effectively accomplished through repositories. In these institutional repositories, authors can place their publications, making them widely available and ensuring their long-term availability. The other is the importance of the proliferation of alternative magazines that provide free access to content. It is important to emphasize that free access does not mean that production is also free. The next milestone was the 2003 Berlin Declaration, which emphasized support for the widespread use of the Internet, which was viewed as a global tool for the distribution of scientific knowledge. There are two conditions specified for Open Access content in the Declaration: The first is to ensure that everyone, wherever they live in the world, could have free access to the contents and that they could subsequently use, distribute and, in small numbers of copies for personal use, print the work, with appropriate references. The other is that a complete version of the work should be deposited in at least one online repository with open access and long-term archiving. Open access thus provides, in addition to quick and free access, the opportunity to overcome spatial and temporal difficulties, to make international cooperation more effective, to considerably shorten research cycles and to distribute new knowledge widely. In addition to the benefits listed above, however, the downside should also be mentioned that many low-quality and also predatory journals have appeared on the market for scientific publications, the latter will be discussed in the next section of my paper.

3 Predatory journals

Predatory or otherwise parasitic journals can also be defined as the parasites of the scientific world that broadcast fake news from the scientific world. This negative indicator comes from their role in the scientific world. With the proliferation of electronic content, and the previously described OA, and the constant need to publish, a niche market was created that has provided the base for the widespread distribution of these publications. It is important to emphasize that predatory journals do not offer a real solution to the above problems, as if a publication proves to conduct pseudoscientific activity, researchers' publications published there will not be accepted for academic promotions or for grant applications. Predatory journals are pseudoscientific publications that claim to be high-quality journals but do not differentiate or select articles for publication based on quality because their activities are solely motivated by profit. In return for the appropriate publication fees, anything is published without any professional criticism. However, this activity casts a bad light on the credibility of scientific publications. In the absence of peer review, the quality of published articles is quite diverse. From low-quality non-scientific articles to publications of real scientific value, readers will find everything in these publications. Parasitic journals are trying to achieve their goals by deception, so it is important for authors to exercise caution before publishing their latest articles anywhere. There are two groups of publishers in these journals. The first, larger group, of unsuspecting

victims who are victims of deception, and did not intentionally publish their articles in these newspapers. With due diligence and research, and noting the tell-tale signs I discuss later, the authors can ascertain the authenticity of a publication. The other, smaller group, includes those who are aware that they are publishing in a parasitic publication, and they are often forced to do so because of the "publish or perish" principle, to be discussed in the next chapter. The first who became suspicious of the parasitic activity was Jeffrey Beall, an American librarian, after receiving too many requests from newly launched online publications to publish his latest articles. However, the requests came from publishers completely unfamiliar to the librarian and were suspiciously riddled with grammatical errors.

He then began his research, resulting in a list of publications he deemed predatory in 2011, which became known as the Beall's List, and continued to expand over the years. Of course, not everyone liked his work, so he was caught in the crossfire of ongoing attacks, which led to him finishing his work in 2017, so now only an archive version of his collection is available. In the absence of the list, the authors have a harder time, as these publications continue to proliferate, so it is very important to thoroughly investigate a journal before publishing to make sure of the publishers real intentions. Predatory publications bombard researchers with unsolicited mail to publish their latest research findings, and these requests should cause further distrust if the messages or the publication's website are full of spelling mistakes. They often choose titles and designs similar to known journals, increasing the likelihood of being mistaken for the original. The members of the editorial board are often recruited on the Internet, or are misrepresented. Reliable publications have an impact factor and are indexed by Scopus. Of course, the former can be falsified, which is often posted on the predatory journals' website, but a genuine OA publication must be included in the DOAJ. In most cases, publishing costs are not predetermined and may include hidden costs, and copyright remains with these journals. One should also be suspicious if a publication has an extremely broad scope and inviting you to publish in the first issue of the first year of the journal since there is no way to know the quality of previous publications.

4 Scientometry

The professional productivity of researchers can be measured by various methods, and it is something that is also necessary to measure in order to decide the quality of a researcher's professional activity. We can talk about quantitative as well as qualitative indicators. Quantitative indicators show how productive these authors are, but unfortunately, recently the scientific community started to favor these at the expense of qualitative indicators. Qualitative indicators measure the impact of published publications, that is the extent to which they are cited.

One of the best-known measurement methods is the h-index, also known as the Hirsch index, which can be defined as follows: According to Hirsch (2005), the h-index is defined as: "A scientist has index h if h of his or her Np papers have at least h citations each and the other (Np – h) papers have ≤h citations each." As an example, an h-index of 13 means that among all publications by one author, 13 of these publications have received at least 13 citations each. One of the main advantages of the Hirsch index that it is suitable for both quantitative and qualitative measurements and as it is looking at a number of publications it takes into account the number of citations received by them as well. As a downside, English-language publishers have a higher h-index than, for example, when publishing in the Hungarian language, and it may also differ across disciplines. A further disadvantage of the Hirsch index is that it disregards the specifics of each discipline, which I will discuss in more detail later in this article, and also distorts the measurement results to the benefit of co-author publishers since all participants receive a

citation to the published articles. Researchers who want to build their professional careers should not ignore the need to have a sufficient number and quality of publications. This, in turn, gets them into a vicious circle as, besides their many activities and teaching, they have to constantly research, present and publish their results in order to gain a proper professional standing and achieve a higher academic degree. The latter has resulted in the appearance of the principle of „publish or perish" meaning that those who do not publish in sufficient quantities cannot advance up the scientific career ladder, so we are talking about a kind of compulsion to publish. This urge to publish, in many cases, results in certain researchers resorting to predatory journals, trying to meet expectations, or when facing a sudden publishing opportunity do not thoroughly investigate the publication.

Founded in 1825, the Hungarian Academy of Sciences is the fortress of the Hungarian scientific world, a public-service organization which among other things supports the cultivation and research of sciences, preserves the purity of scientific life and the freedom of scientific research and self-expression, and is responsible for making scientific results known to the public. Those who aspire to a higher academic degree must meet the requirements of the Academy, so they can earn better positions, receive higher salaries, publish higher-quality publications, and gain greater professional recognition. Although the exact requirements of different degrees vary from institution to institution, they all require a sufficient number of publications and conferences, both domestic and international, in addition to teaching activities. Unfortunately, the latter is closely linked to the previously mentioned "publish or perish" principle, meaning that no one can advance the scientific ladder without a sufficient number of publications. This is also supported by the fact that researchers attain a higher degree faster in the field of natural science than in the field of humanities. Nowadays, in the case of obtaining a degree, articles published in journals are preferred. As a result, the balance between scientific fields is even more upset, as scientific books and monographs all count as one publication just as a journal article, so the time and labor invested in them do not produce a return in a scientifically measurable way. As a result, representatives of a less dynamic field of expertise will have lower visibility. It follows that representatives of different disciplines should not be lumped together. Unfortunately, the measures taken by the Academy are not conducive to the current situation. To answer my third question in the abstract, the increase in quantitative expectations not only feeds the "publish or perish" principle but also transforms it into "publish and perish" over time. Even if a researcher publishes regularly, in the right quality, and in the forums that are relevant to his/her discipline, eventually will find himself/herself in a position that even that will not be sufficient to achieve professional success. This is due to the fact that the genre of publications in humanities and social sciences is ignored when measuring professional performance. According to this, as mentioned above, a monograph counts as one publication just like a journal article does, so it would be necessary to take into account the publishing specificities of each discipline, thus improving equality between those working in different fields. The automatic application of scientometric data to disciplines to which this method would not be applicable, or should be applied differently, needs to be changed, since it creates a negative impact on research in those disciplines. And that could be a solution to my question of what are the measures the Academy can apply in order to protect the authenticity of science. Wolfgang Glänzel talked about the shortcomings of scientific measurements in his work titled Seven Myths of Science Metrics, in which he draws attention to the question marks of measuring scientific performance. In the past, measurement data did not qualify the work of individuals or institutions, so did not count as much as today. Nowadays, however, they are extremely important but it certainly does matter how the authors try to improve their own scientific portfolio.

5 Presentation of my current research

The antecedent of my current research is a pilot research I conducted in the Visegrad Group on the relations of students and educators to Open Access. In the case of the latter, it was clear that respondents had a positive attitude towards open access, but the study also identified that respondents viewed predatory journals as a major threat, which encouraged further research to gain a better understanding of the situation in the area. The results at that time revealed that the main drawback of open access was the concerns about the quality and the authenticity of documents. Based on these findings, I began my ongoing large-scale survey, which I conduct among faculty members of Hungarian universities. Of course, before starting the survey, I formulated my hypotheses, which are as follows:

- I assume that the majority of Hungarian researchers have already published in open-access journals and, as a result, have found that their publications have reached a wider audience.
- I assume in advance that researchers would publish their articles not only in open access journals but also in the repositories of their institution, thereby ensuring their wider distribution and long-term traceability.
- I assume that pseudoscientific publishers have already tried to contact the majority of respondents in some form, but the majority of Hungarian researchers know the characteristics of predatory journals and able to decide whether a publication has real scientific value or not.
- I assume that respondents denounce the activities of predatory publications and do not deliberately publish in such publications for the sake of their scientific advancement, and think likewise of the attitude of their colleagues, and also feel the need for unified action against these publishers.
- I assume that respondents will highlight free access as well as fast access as the benefits of open access, as well as copyright uncertainty and quality issues as the drawbacks of predatory journals.

Following the presentation of the hypotheses some information on the ongoing research: The number of responses received now exceeds 1000, which gives me the opportunity to gain a comprehensive picture of the experiences and opinions of predatory journals by domestic researchers. Thanks to the large number of filled questionnaires, the electronic survey has reached a representative size, so it is possible to get a comprehensive picture of the Hungarian situation. In addition to the basic questions and the hypotheses raised in the survey, I investigate whether there is any difference in the Open Access publishing readiness among respondents depending on the discipline they work in. A difference is expected here since almost half of the Scopus indexed domestic articles are natural science articles. Health and life science articles also account for almost 50%. According to the data, the proportion of social science articles is less than 5%. The specificity of each discipline may play a role in the development of these ratios since natural science researchers publish more and with higher frequency, unlike their counterparts in the humanities, for the former is a more dynamically developing discipline, thus allowing for a large number and continuous work. In addition, natural science researchers prefer journals (both traditional and open access), while in humanities, writing books is not excluded, but each product counts as one publication, however, the time and energy invested in it may not be necessarily proportionate. I also examine the motivation of the interviewees for their professional work, since it can be assumed that those who are motivated are more likely to publish their results in an open-access publication, thus ensuring their wider distribution. In return, their work may receive more citations. The latter is indispensable for advancing a career

in science. As mentioned above in my hypotheses, I expect the respondents to be active repository users, but beyond their own institutional repositories probably also use other methods, such as Google Scholar, Research Gate, Academia.edu or their personal homepage. One of the best-known surfaces of electronic publication in Hungary is the Library of Hungarian Scientific Works (MTMT), which is not a repository but a national publication database, maintaned and operated by the Academy as regulated by law. MTMT is a great initiative to measure the scientific performance of domestic researchers, mainly because it is expected to be regularly maintained, thus providing an opportunity to give a realistic picture of an author's scientific performance. Every Hungarian scientist is expected to maintain a personal data sheet in MTMT with their personal bibliography. In doctoral programs, habilitation and grant applications only this bibliography is recognized. In addition to its numerous advantages, its drawbacks must be mentioned. Unfortunately, there is no rule to indicate the second or multiple editions of scientific publications, and the genre categorization of scientific publications differs from that used in scientific life and is inconsistent and incomplete. Finally, it misinterprets the scientific nature of publications, sometimes too narrowly and sometimes too broadly.

As part of my research, I examine how many respondents use the MTMT interface regularly. This is also important for their scientific advancement because here the authors have the opportunity to easily compile bibliographies, publication lists, which can be used in applications. The answers received here may be related to the motivational responses, which suggest that those who are motivated tend to care for this surface regularly, while those who may be burnt out or staying on the job purely for financial purposes are likely to pay less attention to it. In addition, I examine how many of the respondents have already published in open access journals and, if they have not, are open to this form of publication or tend to be reluctant to do so. One of the key questions of the survey is whether those who have already published in an open-access publication have experienced an increase in their scientific visibility due to open access. International experience shows a clear increase in the citation of researchers, who make their results freely available. I believe that this will not be different for domestic respondents.

Furthermore, I examine whether the authors have an ORCID ID. The essence of this is to make the authors clearly identifiable, since identical names are common, which can cause problems in the performance measurement process. Recently, several publishers have required this free ID when accepting manuscripts. The research questions presented above were primarily concerned with scientific visibility, let me continue with the subject of predatory journals playing a dominant role in the survey. In this part of the research, I examine the relations between those working in Hungarian higher education and predatory journals. I would like to know what percentage of respondents are familiar with the concept of predatory journals, how many have heard of it, and how many of them have been contacted by such publishers. I assume that the majority has already received some kind of request for editorial board membership or publication. I investigate whether researchers recognize the characteristics of predatory publications and the extent to which they can select the appropriate ones from a list, as beyond the aforementioned critical sense, it is necessary to know the characteristics of fake journals in order to unequivocally determine the quality of a publication. This can be connected to the survey's question of whether the author thoroughly researches each publication before publishing his or her articles there. According to my preliminary hypotheses, I believe that the vast majority of respondents are able to make a good decision about a particular journal. For the remainder of the questionnaire, I use Likert-scale measurement to get a more comprehensive picture. I would like to know the respondents' opinion on how dangerous fake publications are to the scientific world. I believe that the majority of those surveyed see this content as a real threat, as it severely undermines belief in science and, in addition to often providing false information, may even unduly favor those who publish in this type of publication as opposed to those publishing in legitimate journals. I would like to know how many of the

researchers attribute some advantage to predatory journals. This advantage may come from the rapid publication process, which is feasible due to lack of peer review, fueled by the previously discussed issue of publish or perish, however, does not provide a real solution for it. Of course, this cannot be considered an advantage in the strict sense, as it is at the expense of quality. Part of this question is whether respondents think their colleagues would voluntarily publish in such journals to advance their careers. This is certainly something to condemn, as it does not help the progress of science but cannot be ruled out as a real possibility. There is no doubt that there are players in the scientific world who are not just unsuspecting victims but publish their works in such papers for some specific reason. In the absence of real results, it is sufficient to pay the appropriate publication fee and the researcher can already possess several international articles that can be listed when submitting applications. However, if a journal proves to be predatory, then the publications published within will not be accounted for in any form whatsoever. If an author encounters a pseudoscientific publication, he or she may report it to MTMT. I would also like to know how respondents feel about their peers' ability to decide whether or not a journal carries out pseudoscientific activity. I believe that the majority of respondents have already been contacted by such publications, and as detailed above in the selection of criteria, and are likely able to decide whether they are dealing with a legitimate OA journal.

My research is currently nearing the final stage of data collection. The results are expected to be published by mid 2020, which I hope will provide a comprehensive picture of the attitude of Hungarian educators towards OA and also to predatory journals.

Acknowledgement

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The Formation Process of Library Districts by Nonprofit Organizations: Case Analysis of the Josephine Community Library District

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Abstract. In the United States, public libraries are divided into three main legal bases in 2017. The first is a General-Purpose Government, which occupies 64.0% of public libraries (Institute of Museum and Library Services, 2019). The second is a Library District, which occupies 15.4%. The third is a Nonprofit-Organization (NPO), which occupies 13.9%. Among the legal bases, the proportion of Library Districts has increased since 1990 by 8.9%, from 6.5% in 1992 to 15.4% in 2017.

Library Districts are Special-Purpose Governments for the single purpose of library management with tax levy and bond authority. Currently, the legal basis that public libraries can acquire stable financial resources through the formation of Library Districts is attracting attention (Elliott, 2013; Goldman 2018). However, many previous studies have been based on the financial system of Special-Purpose Governments. In addition, these studies were under discussion on the premise that public libraries will change the legal basis from General-Purpose Governments to Library Districts.

Therefore, we analyzed the formation process where the legal basis of public libraries has changed from the NPO to the library district. The analysis method was an in-depth case analysis based on material analysis. Additionally, the first author conducted a field survey to observe the management statues in the library district. The subject of the case analysis was the Josephine Community Library District formed in 2017 in the state of Oregon. Then, we clarified the impact of the change from NPOs to library districts on subsequent library management. Furthermore, through the case analysis, we proposed a new framework for "Sustainability" in library district studies.

***Keywords*:** Library Management; Special-Purpose Governments; Library Districts; Local Governance; Community Governance; Nonprofit Organizations

1 Introduction

In the United States, various public services are provided by nonprofit organizations (hereinafter called "NPOs"). According to the Urban Institute's report, "*The Nonprofit Sector in Brief 2018: Public Charites, Giving, and Volunteering*'', the number of NPOs registered with the IRS (Internal Revenue Service) was 1.56 million in 2015. nonprofit sectors contributed an estimated $ 985.4 billion to the U.S. economy (McKeever, 2018). This is equivalent to 5.4% of the GDP (gross domestic product) of the United States.

These NPOs have the following five requirements defined (Salamon & Anheier, 1996). The first is "*formal*", which indicates that NPOs are "*structured*" and differ from informal family groups. The second is "*Private*", which indicates an organizational and structural separation from governments. However, Salamon & Anheier (1996) do not deny that NPOs are influenced by government policies. He points out that government support for NPOs is very extensive. The third is "*Nonprofit-Distributing*", which indicates the basic element of NPOs. However, NPOs are allowed to manage profitable businesses. Its activities are limited to using profits to achieve their own purpose without distributing profits. The Fourth is "*Self-Governing*", which indicates

an internal structure for autonomous management. Fifth is "*Voluntary*" which indicates an organization that participates in the organization and works for the public interest without being forced.

As mentioned above, NPOs provide many public services in the United States. In particular, NPOs accounted for 13.9% of the total legal basis of public libraries in the United States in 2017 (Institute of Museum and Library Services, 2019). Currently, NPOs are an important legal basis in providing public library services. These public libraries run by NPOs are managed based on government subsidies and private donations. However, in recent years, it is not easy to receive sufficient subsidies from government sectors. State governments, county governments, and city governments are facing financial deterioration. In addition, at the economic slowdown, it is difficult for NPOs to obtain stable funds based on private donations.

In such a situation, library districts are a legal basis of public libraries that is attracting attention in the United States. Library Districts are a form of Special-Purpose Governments with taxation rights and bond authority.

Currently, the State Library Agencies in New York and Oregon highly valued the stability of financial resources for library management by library districts (Owens & Sieminski, 2007). Besides, it has been pointed out that library boards can be selected through residents' voting and the services and taxable areas can be changed flexibly.

2 Literature Review and Problem Statement

The most significant of library districts is that they enable stable funding by taxing authority (Brawner, 1993; Crismond, 1993; Molz & Dain, 1999). At the same time, library boards are elected from local residents through a referendum, so it was claimed that more autonomous management could be implemented by forming library districts. Also, it was claimed that library districts form a larger unit, and it is possible to come into play with economies of scale in library management such as budgeting (Hennen, 2002). In addition, Elliott (2013) and Goldman (2018) demonstrated that the revenues of library districts are stable over the long term compared to other legal bases of public libraries such as General-Purpose Governments and NPOs.

On the other hand, Crismond (1993) pointed out that library districts which are independent local governments have drawbacks and which causes labor increase because the local government task involves wage system and welfare programs. Furthermore, administrative scholars Berry (2009) and Ebdon et al. (2019) demonstrated that the expenditures in library districts are more extensive than other legal bases of public libraries. Additionally, they said that an in-depth analysis is needed to clarify the quality of service and expenditure in public libraries with taxing authority. In other words, as a remaining problem from the previous research, the need to clarify the actual state of stable management should be mentioned by library districts which have taxing authority.

Besides, these studies were under discussion on the premise that public libraries will change the legal basis from General-Purpose Governments to library districts.

General-Purpose Governments (e.g., municipalities) and Special-Purpose Governments (e.g., library districts) have some common elements, for instance, being governments managed by tax fund. However, NPOs do not have taxation rights, and they are dependent on donations from private sectors, in addition to government subsidies. In this way, NPOs have various private sector's elements.

As mentioned above, library district studies have been based on the premise that the General-Purpose Government change into library districts. For library district studies, it is necessary to analyze the case of NPOs replacing library districts.

3 Research Purpose

In this study, we analyzed the formation process where the legal basis of public libraries has changed from the NPO to the library district. Then, we clarified the impact of the change from NPOs to library districts on subsequent library management. Furthermore, through the case analysis, we proposed a new framework for “Sustainability” in library district studies.

4 Research Method

The analysis method was an in-depth case analysis based on material analysis. Additionally, the first author conducted a field survey to observe the management statues in the library district. In this case analysis, we selected the case of the Josephine Community Library District in the State of Oregon. The director of the Josephine Community Library District received the award of Library Journal's Mover and Shakers 2019 as a community builder (Library Journal, 2019). This is due to the evaluation of the long-term campaign activity of the public library in Josephine County as it transitions from the NPO to the library district. Therefore, in this study, the Josephine Community Library District was analyzed as a particularly suggestive case.

The material analysis was conducted, mainly based on the following sources. *American Libraries* and *Library Journal*, which was used in library communities. *Voter’s Pamphlets* of Josephine County, which was a brochure that detailed the reasons for the formation of the library district. *Josephine Community Library District Economic Feasibility Statement*, which was a statement of how management and services will change since the formation of the library district. *Josephine Community Library District Annual Report*, which was reported library management and library services for one year after the formation of the library district. Also, we analyzed the *Annual Report for the Josephine Community Library District Board of Directors*, which was examined more detail library activity for one year.

The field survey was conducted in the library district by the first author. He visited the Josephine Community Library District in February 2019 and December 2019 and observed the state of library management. Also, he attended the meeting of the library board and the meeting of the Library Foundation. At the same time, he collected the data from the library director and staff for in-depth case analysis, such as obtaining the latest statistical data of the Josephine Community Library District.

5 Results

5.1 The Formation Process of the Library District

In Josephine County, federal timber subsidies were the county government's financial lifeline (Goldberg, 2008). However, the county government faced fiscal deterioration as federal support was rejected by Congress in 2006. The resources of public libraries in Josephine County have traditionally depended on the county's general budget. As a result, the Josephine County Public Library was closed in May 2007 with a total of 4 main and branch libraries. Four months later, community members founded Josephine Community Library, Inc. (hereinafter called “JCLI”), a nongovernment and nonprofit organization to reopen the closed library. The county government leased four closed public libraries to JCLI. (Goldberg, 2008). The main library was reopened in December 2008, and the other three branch libraries were reopened by December 2009 (Chant, 2014).

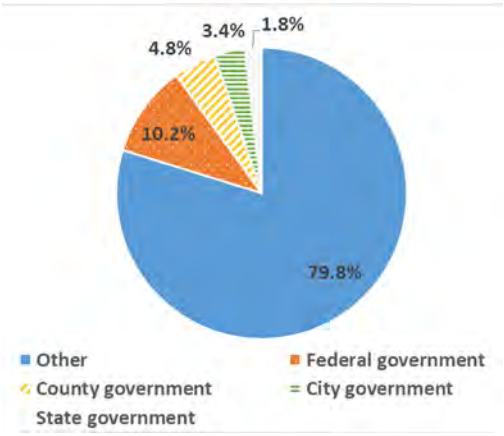
Under these circumstances, the Oregon Library Association has expressed the following concern to JCLI (Library Development and Legislation Committee, 2010).

"The Oregon Library Association applauds local efforts to maintain library services, yet encourages the County to look for long-term stable public funding with public management. The reality is that it is extremely difficulty to have public libraries without dedicated, stable public funding."

The Oregon Library Association evaluated the efforts of residents to maintain library services. However, it stated that library management requires stable funding. It shows that it is a stable fund dedicated to the library, specifically encouraging the formation of library districts.

Next, we show the revenue and characterize the financial structure of JCLI. Graph 1 shows the revenue composition of JCLI in FY2014, five years after 2009, when all public libraries in Josephine County were reopened. As graph 1 shows, revenues from the county government, the city government, the state government and the federal government account for 5.2% of the total revenue. On the other hand, other revenues from the non-government sector account for 79.8% of the total revenue. Thus, it can be seen that the main source of revenue is attracting from the non-government sector, such as a donation for JCLI.

In addition, the total operating revenue per capita of JCLI was $8.84 in FY2014. In the state of Oregon, the total operating revenue per capita of the average in public libraries was $55 (State Library of Oregon, 2015). In this way, JCLI's finances were smaller than other public libraries.



Other	$586,429
Federal government	$75,203
County government	$35,000
City government	$25,000
State government	$13,419
Total revenue	$735,051

Fig. 1. Revenue of the Josephine Community Library, Inc. FY2014
Source: State Library of Oregon. (2015). *Oregon Public Library Statistics*

Under such financial situation, volunteer works were indispensable for library management by JCLI. Total volunteer service time of JCLI was 29,275 hours in FY2014. In the state of Oregon, volunteer service time of the average in public libraries was 4,019 hours (State Library of Oregon, 2015).

Also, JCLI and Oregon 's Kitchen Table program collaborated to conduct a survey to understand residents' opinions on materials, furniture, and space for children in June 2015. Oregon's Kitchen Table is a program of the National Policy Consensus Center housed in the College of Urban and Public Affairs at Portland State University (Oregon's Kitchen Table, n.d.). 159 residents participated in the survey, 50.3% lived with children and 49.7% are not living with children. Among the survey results, we focused on Question 9, "*Are you currently a volunteer or donor of Josephine Community Libraries?*". The results are shown in Table 1. According to the findings, 22.5% of respondents were volunteers, 51.1% were donors, and 26.4% were not applicable (1 and 2 were duplicated). As we can see, library management of JCLI is supported by donations from local community members and volunteers.

Table 1. Are you currently a volunteer or donor of Josephine Community Libraries?
Source. Oregon 's Kitchen Table. (2015). Josephine Community Library consultation report. (Modified by the author.)

1	Volunteer	22.50%
2	Donor	51.10%
3	N/A	26.40%
	Total	100% (N=178)

However, JCLI faced difficulties with responding to the growing demand for library services. The situation was described as follows (Josephine Community Libraries, Inc., 2016).

> *"JCLI found that donations cannot keep up with the population, nor can it meet Oregon Library Association (OLA) standards for basic public library services. To respond to the ever increasing demand for library services, including additional open hours and more books and other materials, a stable source of revenue is needed. This stable source of funding, together with volunteers and additional revenue sources, can provide basic services that can expand over time as needs warrant and resources allow."*

Therefore, JCLI appealed for stable financial resources in order to respond to the increasing demands of residents, such as extending the opening hours and adding materials. In 2014, the referendum was conducted to form the library district. However, the result was rejected because it was unable to win the majority approval of voters.

Later, in 2017, the referendum was held to form the library district. Among the opinions expressed by the supporters of the formation of the library district during this referendum, it was emphasized JCLI has supported by donations and volunteers for a long time (Josephine County, 2017).

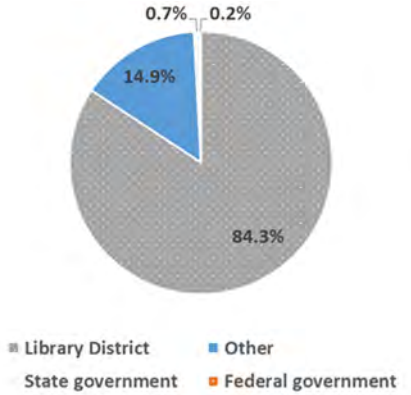
> *"JCLI has done an amazing job with its dedicated volunteers and donated funds from community members. The volunteers will continue to be a cornerstone of the new Josephine Community Library District."*

In this way, even though the library district with stable financial resources was formed, volunteers continued to be emphasized of being a "*cornerstone*" for library management. The referendum in 2017 made the majority of citizens vote for the library district formation.

5.2 Library Management by the Josephine Community Library District

The formation of the library district was approved by the residents. At the same time, the board of directors were elected by voters. The board of directors worked closely with JCLI to build the necessary infrastructure for the library district (Josephine Community Library District, 2017). Specifically, the board of directors and JCLI met weekly for the first six months after the formation of the library district. Then, JCLI was gradually taking over management and administration to the library district.

Graph 2 shows the revenue composition of the Josephine Community Library District after the second year since the formation of the library district. As Graph 2 shows, 84.3% of the revenue composition of the library district is based on the property tax of residents and 14.9% is revenue from the nongovernmental sector in FY2018. The total revenue is $1,606,377. As shown in the above revenue structure, JCLI's total revenues were $735,051 in FY 2014. The successful formation of the library district has a much stronger financial base.



Library District	$1,353,950
Other	$238,600
State government	$11,016
Federal government	$2,811
Total revenue	$1,606,377

Fig. 2. Revenue of the Josephine Community Library District FY2018
Source: Josephine Community Library District. (2019). *Oregon Public Library Statistical Report*
(Supplied material from the Library Director of Josephine Community Library District)

We also focused on other revenue from the non-governmental sector, mainly donations. Other revenue is $ 238,600 in FY2018. On the other hand, in FY2014, other revenues were $ 586,429. However, it is 14.9% of the overall financial structure of the library district in FY2018. The revenue from the private sector, mainly donations from the local community is still important resource after the formation of the library district.

By acquiring a strong financial base, the number of paid staffs increased from 9 full-time equivalents (FTE) to 13.5 FTE in January 2018 (Josephine Community Library District, 2018). In addition, the library district explained in its Annual Report "*Library volunteers remain the heart of our library, critical to our success community culture*", the library district maintained active use of volunteers (Josephine Community Library District, 2019a). For example, "*Maintain high volunteer engagemen*t" was shown along with "*Maintain high staff engagement*" as goals in the 2017-2020 Strategic Direction of the library district, and the following three were listed as initials (Josephine Community Library District, 2019b).

1 "Develop and implement a staff and volunteer professional development program that aligns with organizational needs"
2 "Enhance volunteer engagement in evaluating and implementing adjustments to library services and procedures"
3 "Codify the unique culture that exists between staff and volunteers"

In this way, the library district aims to increase the expertise of volunteers as well as staff. It indicates essential to strengthen the involvement of volunteers in services.

On that basis, it was 26,732 hours of the volunteer service time in FY2018 (Josephine Community Library District, 2019c). It was 29,275 hours, which was run by JCLI in FY2014. In comparison, it decreased slightly in FY 2018. However, volunteer service time was maintained at a high level. This shows that volunteers continue to support library management even after the formation of the library district.

6 Discussions

6.1 Limits of Public Library Management by NPOs with Small Financial Bases

The reason why JCLI, which was run as NPOs, changed its legal basis into library districts is that public libraries cannot longer respond to growing community needs.

Koizumi (2011) pointed out that "*persistence*" is critical as the uniqueness of library management and noted that it is different from the management philosophy of general nonprofit organizations. In addition, he stated that library services are cumulative and tends the cost inevitably increase.

Thus, it is not easy to provide library services in the long term with a small financial base such as JCLI. Furthermore, in order to collect more donations and manage volunteers efficiently, human resources with specialized knowledge is required. Library Districts with stable and strong financial bases are becoming more effective for libraries that need to expand services while maintaining their existing services.

6.2 Continuous Utilization of "*Voluntary*", A Requirement of NPOs by Library districts

In the referendum, the fact that donations and volunteers supported the management of JCLI also emphasized the "*legitimacy*" of the formation of the library district. Their continued support was also argued as a sign that the public library plays an important role for the community.

In the Josephine Community Library District, despite having strong financial basis, they valued the role of volunteers. In other words, "*voluntary*," which is a component of NPO, was succeeded even after the legal basis was changed from NPOs to library districts.

7 Proposal of New Framework for "Sustainability" in Library District Studies

Fig. 3 shows the framework of "*sustainability*" of the library district management for future research. Through the case analysis of the Josephine Community Library District, we showed management status that importance on "*Voluntary*," such as actively using volunteers even after the public library has acquired stable financial resources. It has been claimed that a stable source of the tax levy in the library district management in the past. However, it is just one characteristic of the overall management mechanism.

Therefore, we illustrate the sustainability of library districts by management mechanism based on four elements (Figure 1). The first is "*Direct burden*", tax payment of residents for library districts. The second is "*Voluntary participation*", residents are involved in library management as library boards or volunteers. The third is "*Benefits*", the library service provided with the cooperation of the residents leads to the development of the community. The fourth is "Evaluations", library districts with management accountability are evaluated directly by residents. Library district management is carried out by this cycle.

As mentioned above, previous research has only approached library district finance. On that basis, we propose that it is necessary to conduct a library district study with the four elements of library management as a new and broad framework.

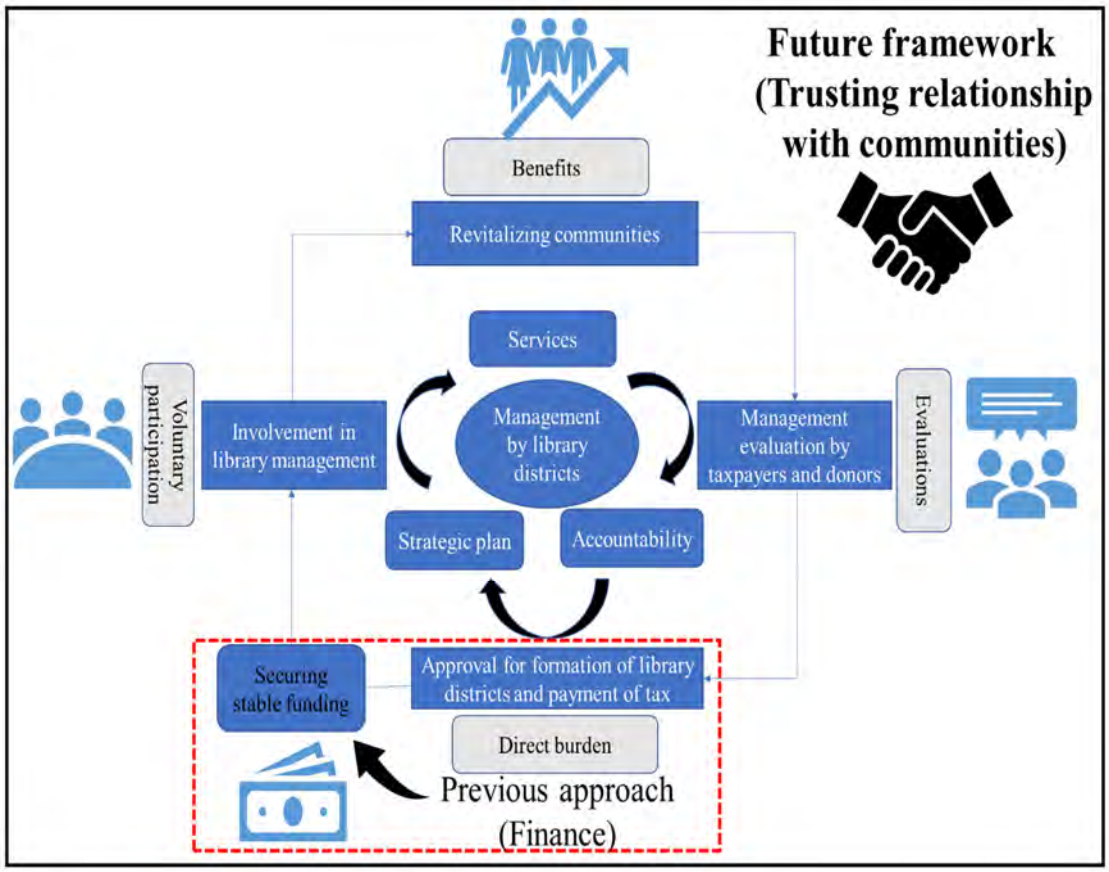


Fig. 3. New Framework for "*Sustainability*" in Library District Studies

8 Conclusion

We analyzed the formation process where the legal basis of public libraries has changed from the Nonprofit Organization to the library district. Then, we clarified the impact of the change from NPO to library district on subsequent library management. Furthermore, through the case analysis of the Josephine Community Library District, we proposed a new framework for "Sustainability" in library district studies. The previous approach of library districts has only approached finance mainly revenue with a tax levy. On the other hand, our new framework is based on four elements: 1) Direct burden, 2) Voluntary Participation, 3) Benefits and 4) Evaluations. This framework will contribute to future library district researches.

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The Future of News and How to Stop It

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Abstract. Today we have an abundance of information resources undreamed of in past centuries, but are exposed via the Internet to more disinformation than any previous generation. Digital media technologies are being massively leveraged to spread propagandistic messages designed to undermine trust in all forms of information, and to stimulate strongly affective responses and an entrenchment of political, cultural, and social divisions. The critical demands of the digital age have outpaced development of a corresponding information literacy. Meanwhile journalists are accused by authoritarian leaders of being "enemies of the people" while facing layoffs from newsrooms no longer supported by a sustainable business model. Short of reinvention, professional journalism will be increasingly endangered and the relevance of news organizations will continue to decline. In this paper I propose a new collaborative model for news production and curation combining the expertise of librarians, journalists, educators, and technologists, with the objectives of addressing today's information literacy deficit, bolstering the credibility and verifiability of news, and restoring reasoned deliberation in the public sphere.

***Keywords*:** Internet; disinformation; fake news; information literacy; journalism; library science; education; public sphere

1 Introduction

The definition of "information literacy" remains contested in the academic realm. This is not surprising since the definition of "information" is even more contested, as is the word "literacy." Most common definitions of literacy cite the ability to read and write text [1]. But does an informational object containing text consist only of information? Or does it often consist of small bits of information embedded in a large volume of noise?

Take the example of fake news. I don't like the term "fake news" because it is especially fake. Fake news is a charge most frequently deployed by those who seek to deny and discredit real news. Calling something Orwellian may be an overused trope, but the term is justified in the case of "fake news." For this reason, when discussing falsehoods and deception in our media systems, I prefer the term disinformation[1].

We may never fully resolve the definition of information once and for all, but for the sake of argument I'll refer to it as a signal of reality perceived through a media object that may also contain a great deal of noise. On the Internet, millions of text-literate people are misperceiving signals of reality, and being misled by massive amounts of disinformational noise, much of which is designed to deceive. It seems that text literacy is inadequate to the task of sorting truth from deception and making informed decisions as citizens in the age of the Internet. What we really need is a more expansive Information Literacy, which involves the ability to not only perceive a signal, but also to think critically about it.

[1] There are of course many other terms for the many varieties of deceptive or misleading messages: misinformation, malinformation, made-up news, imposter content, false context, propaganda, etc. At the risk of imprecision, in this paper I lump them all in a general category of disinformation.

The Association of College and Research Libraries *Framework on Information Literacy for Higher Education* articulates fundamental ideas about critical skills, knowledge practices, and dispositions needed for learners and curriculum development. The Framework was written for the present time, as digital technologies and the Internet are increasingly dominant features of our information ecosystem. It defines information literacy as "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" [2]. John Buschman calls this "critical reflexivity," and argues that text literacy, media literacy, computer literacy, digital literacy and a host of other adjectives of literacy are categories of what we now call information literacy, where we apply critical reflexivity to text, media, digital, and all other sources of information and noise [3].

Conceiving of literacy this way may help develop a strategy for dealing with our current disinformation disorders. In this paper I argue that the ideas in the Framework can provide a conceptual map to reinvent the work of journalists and news organizations, in collaboration with librarians, educators, and technologists, and a new model of news production that embodies and enacts the knowledge practices and dispositions of information literacy.

2 A Detour à la Latour

We might gain some insight into today's digital information disorders by considering the history and impact of earlier innovations such as printed text. Much has been claimed about the influence of the printing press on the expansion of literacy. Clearly the press led to an expansion of text literacy among previously "illiterate" populations. It is also clear that text literacy was a feature of human cultures at least a millennium before print [4].

In *Visualization and Cognition: Thinking with Hands and Eyes*, Bruno Latour examines the the sixteenth century emergence of modern scientific culture in Europe. Latour argues that the effects of the rapid rise of science and technology "are so enormous that it seems absurd not to look for enormous causes." But he rejects "grand dichotomy" narratives that posit a sharp divide between pre scientific and scientific cultures, theories of rapid evolution of the human brain, and claims that the rise of science culture was part of some deterministic historical process. He suggests that an Occam's Razor test might point to the role of the printing press in facilitating "simple modifications in the way in which groups of people argue with one another using paper, signs, prints and diagrams" [5].

Scientists of the period were engaged in the "transformation of rats and chemicals into paper," inscribed in forms that could be "combinable, superimposable, and integrated as figures in the text of articles people were writing." Writing and imaging in the form of print allowed authors to access a much broader range of research and scholarly claims. The new thing in the sixteenth century, Latour says, was not science:

> *Before the advent of print every possible intellectual feat had been achieved – organized scepticism, scientific method, refutation, data collection, theory making – everything had been tried, and in all disciplines: geography, cosmology, medicine, dynamics, politics, economics and so on. But each achievement stayed local and temporary just because there was no way to move their results elsewhere [5].*

With the printing press came a new feature of written information: mobility. Latour uses the term *immutable mobiles*: information objects which have the properties of "being mobile but also immutable, presentable, readable and combinable with one another." Printing allowed scientists and scholars to publish and broadly distribute their research, and to argue for their interpretations of evidence and theory. Others could read published materials and respond with

their counter-arguments, evidence, and theory. These encounters facilitated exchange of information between authors, and a "proof race" that led to refinement of ideas and rapid progress in science and technology [5].

Elizabeth Eisenstein notes the importance of the "more abundantly stocked bookshelves" of sixteenth century in enabling comparison of different texts:

> *Contradictions became more visible, divergent traditions more difficult to reconcile . . . not only was confidence in old theories weakened, but an enriched reading matter also encouraged the development of new intellectual combinations and permutations [6].*

Jack Goody and Ian Watt argue that the persistence of text encouraged new forms of skepticism:

> *Literate societies… are faced with permanently recorded versions of the past and its beliefs; and because the past is thus set apart from the present, historical enquiry becomes possible. This in turn encourages scepticism; and scepticism, not only about the legendary past, but about received ideas about the universe as a whole. From here the next step is to see how to build up and to test alternative explanations: and out of this there arose the kind of logical, specialized, and cumulative intellectual tradition [7].*

Buschman identifies this "higher-order thinking in information processing" as the "cognitive tools developed by literacy," such as the distancing of subject from object, awareness of context, and comparison of sources and claims. He invokes the centrality of "intertextuality" where information is examined critically regardless of form, including the "evaluation of conflicting evidence, comparison, contrasts, and argumentation." His claim is that all forms of literacy rely on a critical and reflective stance that is central to information literacy [3].

This view of information literacy has direct bearing on our interpretations of sixteenth century science culture. Printed materials were becoming abundant, immutable, and mobile. The available materials included text, illustrations, diagrams, dictionaries, charts, maps, and early representations of what we now call data. In Latour's framing, transformations of rats and chemicals into paper, published as print and shared broadly, became objects of critical evaluation in the work of science and other intellectual pursuits. The printing press made this possible as "the old texts are spread everywhere and can be gathered more cheaply in one place," he writes. "But then the contradiction between them at last becomes visible in the most literal sense" [5].

In other words, the emergence of modern scientific culture was not the result of some teleological process or new kind of brain, but the exposure of old brains to a wider range of immutable and mobile information, which led to the development of more critical and reflective knowledge practices and dispositions we now call information literacy.

3 From Immutable Mobiles to Hypermutable Cybermobiles

But how does the sixteenth century world of print compare with the 21st century digital information environment? We have an abundance of information resources undreamed of in past centuries. The global text literacy rate has been increasing by five percent per year since 1960, and reached 86 percent in 2015 [8]. But the world has grown vastly more complex due to technology, global migration, urbanization, climate change, and seemingly entrenched political, economic, and social divisions.

The Internet makes information vastly more mobile than print. Yet because of the ephemeral nature of digital formats, much of our information is now more fragile than the first artifacts of writing in 3500 BC. Through the Internet, we are exposed to more disinformation and ill-formed

arguments, evidence, and claims than any previous generation. Everything is mobile, but nothing is immutable. And the actors waging disinformation campaigns are flooding our communication channels with messages designed to deceive, confuse, and convince global populations that the work of professional news organizations cannot be trusted.

Digital information is not only fragile and hyper mobile, it is easily transformed into disinformation. There is nothing new about political actors using propagandistic techniques to manipulate perceptions and opinions. What is new are digital media technologies that drastically alter how people engage with, shape, and share information in public and private domains. In this environment the origins of disinformation can easily be obfuscated. Social media networks are fertile ground for "tactics encouraging and enabling target audiences to not just spread, but also to create and adapt propaganda messages," providing "a more effective means of mass persuasion given that people tend to find recommendations from their personal social network more credible than others" [9].

The effect of this kind of "participatory propaganda" in digital form is fundamentally different from the intellectual impact of Latour's immutable mobiles in the sixteenth century:

- Disinformation can dominate digital information environments through sheer volume of messages delivered by both real people and automated accounts, sowing confusion about the line between authentic and fake information and sources.
- A propagandist can use a wealth of demographic and personal data to target individuals with provocative content designed to elicit affective responses, such as fear or anger.
- Propagandistic messages are designed to exploit political and social divisions, and to reinforce existing polarization and distrust.
- Digital analytics allow propagandists to monitor the spread of their messages and adapt messaging and distribution strategies in near real-time.
- Meme factories funded by political campaigns, authoritarian governments, and other badfaith actors spread visually engaging allegations of conspiracies and corruption by political opponents and social movements. Real images are often posted out of context to lend authenticity to false narratives [9].
- Sensationalistic allegations draw the attention of jouralists who then report on and amplify them further. News organizations increasingly report on outrageous claims posted on social media. Even fact checking can reinforce the impact of disinformation by repeating it, regardless of context [10].
- Imposter content using logos of major news organizations peddles counterfeit news (i.e. actual fake news) [11].
- The algorithms of social media feeds and search engines are "gamed" to boost deceptive messages. Multiple fake news websites link back and forth to each other, raising search ranking for false stories about real events while crowding out authentic information [9].
- Bots automatically post massive amounts of disinformation and manipulate search and feed algorithms. Botnets are sponsored by authoritarian governments, political campaigns, and their consultants, or sold for profit by commercial enterprises using "sock puppet" accounts and hacked profiles on social media [12].
- Hackers disrupt official communications, vandalize websites, and steal information for use in political attacks and disinformation campaigns [9].
- Trolls inflame conversations on news websites and social media to trigger outrage and increase polarization [9].
- News media organizations operate in an information space crowded with sensational content. The competition to break through the audience's "attention deficit" leads to editorial decisions and headlines designed to attract likes, clicks, and shares, which further blur impressions of what is fake or authentic.

- “Deep fakes” use machine learning and huge datasets to make convincing forgeries of people saying or doing things they never did, using images, audio, and video [13].

These and other disinformation techniques take advantage of the mental shortcuts we use to make sense of the world, especially when overstimulated by a constant flow of information from digital platforms and devices. Under stress we often fall back on heuristics to relate new information to things we already believe, reinforcing existing views instead of critically examining them.

In short, the impact of digital information is fundamentally different from the sixteenth century impact of print. We have reinvented our information environment, and the cognitive demands of the digital age have outpaced the development of a corresponding information literacy.

The rules and methods of professional journalism were developed for the 20th century, but to help citizens make sense of digital information technologies and their impact on the world, we need to reinvent news for the 21st.

4 Disinformation Inoculation

As an instructor in journalism and digital media, I’ve noticed that most students come into my classes knowing almost nothing about the underlying technologies of the digital age. They have been using digital tools, the Internet, and social media without even thinking about where they came from or how they work. My lesson plans now include the history of media, and how digital technology and the Internet work. These lessons consistently improve my students’ learning outcomes and motivation. I believe this approach also better prepares students to be critically reflexive consumers, creators, and critics of media and technology.

The same approach could be applied to news and journalism. Research by Michelle Amazeen and Erik Bucy shows that people can more easily identify fabricated news when they have a working knowledge of how the news media and journalists do their work [14]. People with “procedural news knowledge” are inclined to use a wider range of news sources, and are more perceptive of credibility cues [15]. A 2018 Pew survey found that when people learn how news is made, they are both more aware of its imperfections and limitations, and are less likely to trust news from social media and search engines. They are also less inclined to share suspect content, and more inclined to participate in civic engagement and democratic processes [16].

This research suggests that news organizations could build news fluency and trust by explicitly describing their editorial process to audiences, and educating the public about how they operate. But given the extent of the world’s information disorder, news organizations could use some allies from other information professions, and a new model for creating news that incorporates the knowledge practices of information literacy.

5 An InfoLit Model of News

Libraries are among the most trusted institutions in public life. Libraries in democratic societies provide a space for rational discourse and enacting Jürgen Habamas’s conception of the public sphere [17]. They provide a broad range of resources people can use to verify or refute claims of fact and authority. They welcome underserved citizens and make information and education more universally accessible [18]. Public libraries are spaces where people can have conversations with information and with each other, especially where policies and programs actively promote the library as a center for exploration and public discourse. It would make great

sense for libraries to prioritize collaboration with other institutions who are likewise committed to the vitality of the public sphere.

Librarians are also involved in every level of education as experts on information resources, multiplicity, and authority. They help define educational outcomes, inform curriculum and resource development, and assist in planning for technology, pedagogy, and assessment. They collaborate with learners, educators, and administrators to build information literacy into instruction at all levels.

So let's invite librarians into the newsroom. Not simply as data managers and archivists, but as experts on source authority, research as inquiry, and searching as strategic exploration [2]. In collaboration with librarians, news organizations could address information literacy at a strategic level. Here are a few ways in which librarians could help improve journalism:

- Institute better citation practices. News stories, especially investigative reports, could include a list of references with inline citations. This isn't always possible, for example when a report is based on statements from "officials familiar with the matter." But from an audience perspective, basing a story on unnamed sources is already problematic. Whenever possible, journalists should show their sources so as to demonstrate transparency, and to allow for independent verification.
- Serve the newsroom as a reference desk. Reference librarians are experts in identifying the most relevant queries, and guiding people to the most useful resources.
- Suggest additional information resources to provide context for a given story, and encourage reporters to break out of traditional news framing and habitual story tropes.
- Perform data services for the newsroom. Data journalism is of growing importance, but most reporters don't have time to become data experts, perform statistical and text analysis, or design data presentations and user interfaces. Reporters who want to learn these skills could have access to a subject matter expert in the newsroom.
- Find and organize records-based data, such as government and industry documents, and file and follow up on FOIA requests.
- Catalog, organize, curate, and preserve the work products of the newsroom. Managing digital information and media is difficult and time consuming, as evidenced by the digital mess in every newsroom I have ever encountered.
- Provide expertise on metadata standards and best practices for information organization and retrieval.
- Build an actual library of information resources needed by the newsroom. Document the provenance of information to help assure its validity and relevance to news stories.
- Serve as a trusted agent and ambassador to the newsroom's audience and community, and contribute to building community engagement and public trust. Imagine the potential impact of saying to audiences "I'm the newsroom librarian. Ask me anything!"

These are just a few ideas for integrating library science in the newsroom. Librarians and journalists have similar objectives in serving the public interest, but they look at information through different lenses. Librarians can provide journalists with training on research strategies using the knowledge practices and dispositions of information literacy. Journalists can help librarians understand reporting and digital media production processes. The application of both lenses to news reporting would lead to deeper and more credible journalism.

6 Building a Pedagogy of News

As journalists we are engaged in work that performs important functions of education, but in general we're practicing what Paulo Freire calls the "banking model" of education [19]. We

gather and package information, then deposit it in people's brains. Today we're struggling just to reach audiences, hoping to deposit an engaging and meaningful signal through the noise.

Educators have expertise in education theory and pedagogical strategies. They develop lesson plans with specific learning outcomes. They recognize different learning styles, and understand instructional design. The best teachers I know understand something most journalists generally don't think about: that knowledge is actively constructed by learners, not passively ingested by empty vessels. The teacher's emphasis is on the learning process of students, not the material being taught [20]. Teachers who have experience working with journalists would be better able to teach students how to critically consume news. But educators could also play an innovative role in the newsroom. Here are a few ways educators could help improve journalism:

- Work with journalists to develop a "pedagogy of news." Journalists are already engaged in education in the broadest sense. But journalists don't generally regard themselves as teachers, and so don't avail themselves of educational theory and instructional design.
- Work with editorial staff to define specific learning outcomes for news stories. Learning objectives could be clearly articulated, and the reporting, writing, production, and distribution of news content could be based on those objectives.
- Build formative assessment into the products of news. There are probably many ways to test and reinforce audience news knowledge, such as gamification of topics like climate science, election procedures, law, health and medicine, and politics.
- Develop summative assessment methods for the impact of news on learning outcomes, to address the question every good journalists asks: "Does my work make a difference?"
- Encourage journalists to visualize their audience as learners, who have all the characteristics that challenge teachers: different cultural backgrounds, perceptual abilities, cognitive skills, learning styles, prior knowledge and misconceptions, and schema through which they interpret new information. This would help journalists transition from a content-centered to an audience-centered approach to news. It would also provide a theoretical and practical approach to what much of the news world calls "community engagement."
- Help journalists understand news as a part of life-long learning, and to see themselves as not just reporting the news, but educating people on the subjects of news.
- Transform newsroom work products into "curricular" materials that could guide news audiences to a deeper understanding of a story subject from beginning to end. The material could be presented in a variety of forms to best match the nature of the information and the learning objectives of the reporting.
- News as curricular materials could be repurposed in the classroom, bridging gaps between current events and school lesson plans on politics, history, economic, commuications, science, and other subjects addressed in news reporting. Educators in the newsroom could serve as a pipeline for connecting news with educational materials used in schools at all levels.

7 Technology won't save us but we need it anyway

A growing number of technology developers are also fed up with disinformation disorder and the use of their labor to surveil people and exploit their personal data. Many would collaborate with journalists and other information professionals to restore credibility, privacy, and trust in our information systems. Newsrooms need digital tools and technologies that can help serve the public interest. Developers are already creating open source solutions for news reporting, publishing, data analysis and visualization, etc., and since newsrooms share the problems they could share the solutions. For example, the NPR Visuals Team has built a number of open source

tools for NPR news, and has made them freely available on GitHub [21]. Developers working in a news environment alongside a team of journalists, librarians, and educators are likely to perceive technology problems in new ways, and provide new ideas for challenges like story design, digital media workflow, archiving, and metadata.

8 Towards a News Model for the 21st Century

The news model of the 20th century positioned journalists as impartial arbiters of facts, reported with objectivity and fairness for the purpose of informing people on important issues of the day. The assumption was that when people receive the facts, they would compare them with other facts to arrive at a better understanding of truth. Informed by a true picture of reality, citizens could constructively debate and deliberate with other citizens, leading to civic health and functional democracy. Societal progress and a more affluent and humane future would follow. This is the critical thinking model described by Latour, and we can see it in the impact of print on scientific innovation in the sixteenth century.

But the Internet and digital media have disrupted Latour's model by flooding our information spaces with strategic disinformation sponsored by actors who seek control and power, not civic health and democracy. Today's digital information is both mutable and hypermobile, and broadly distributed on social media platforms designed not to inform, but to generate "engagement" and highly affective responses. In a world polarized by "alternative facts" and technology-driven echo chambers, constructive deliberation by informed citizens is becoming increasingly rare. 21st century news must address this disruption by accounting for the challenges people now face in sorting signals of truth from mountains of disinformational noise.

It's easy to imagine objections to reinventing news. The ideas presented in this paper may seem too difficult or too costly to implement. It's also easy to predict that without reinvention, news organizations will continue to lose audiences and revenue, lay off reporters and editors, and fail to address the information challenges of the 21st century [22]. Trust in news media is declining worldwide [23]. This parallels a decline of trust in other instutitions, including governments and democracy [24].

I am not suggesting that changing the 20th century model of news would be easy; I'm suggesting that it's important enough to try.

9 Conclusion

Once upon a time as a technologist, I imagined that the Internet would empower people who want to create a more socially just and democratic world for all. It turns out the Internet also empowers people who want to create a world of disruption for their own benefit. As a journalist I've been watching the growth of disinformation on social media networks and its corrosion of trust. As a librarian, researcher, and teacher, I study the particulars of that disruption and corrosion. It's clear to me that those of us concerned with truth, democracy, and social justice share a very difficult challenge. Our global disinformation disorder is growing more disruptive each year, and we have yet to develop a corresponding approach to information literacy.

A deficit of information literacy isn't our only problem. In this paper I haven't addressed the corruptive influence of the advertising model on news and social media networks, the practice of "both sides" journalism that uncritically positions opposing political arguments as equally valid [25], the rise of hyperpartisan media organizations that play to the biases of hyperpartisan audiences [26], or the strategic use of information warfare by nations in pursuit of geopolitical interests [27, 28]. It can also be credibly argued that the Internet is now owned by Big Tech, and that it's too late for anything to displace, reform, or regulate Facebook, Twitter, Google, or

Amazon. These are important topics for other papers, but at the present time we're not likely to overthrow monopolistic capitalism or the imperial ambitions of authoritarian governments.

Instead I'm suggesting something that is within reach: In collaboration with journalists, librarians, teachers, and technologists we can build a new model for news that has a better chance to communicate a signal worthy of trust through the noise of fake news.

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Glimpses of Twitter and Facebook in research articles

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Abstract. The purpose of the study is to encircle how research articles has depicted Twitter and Facebook by reviewing keywords and terms in abstracts and titles. The data was collected from Scopus by utilizing a search query which was gradually and iteratively matured, by reviewing keywords and titles as well as reading through randomly selected abstracts. The final number of articles were 2415, which were analyzed using MS Excel for statistical measures while VosViewer was used to analyze keywords, terms in abstracts and titles as well as bibliographic coupling and citation analysis. The findings show a steady increase of articles published from 2011, suggesting a growing interest to research the subjects. As for citations it's shown that outliers can heavily skew the measure and that there are discrepancies between the most cited articles and the whole dataset. The co-word analysis identify four main clusters, showing how Twitter and Facebook relate to different aspects of social media in a political context. The findings also indicate changes in how Twitter and Facebook have been depicted and the differences between the two is discussed from two features of social capital, namely bonding and bridging. In conclusion, the research surrounding Twitter and Facebook have grown and become more complex and multifaceted, but also that they're seen more in relation to practical implications and societal events taking place. Analyzing the structure of the clusters it's shown that the subject is not becoming saturated.

***Keywords*:** bibliometric analysis; Twitter; Facebook; co-word analysis

1 Background

During the twenty-first century, social media has been a burgeoning phenomenon. Since 2004 Facebook has grown from founder and CEO Mark Zuckerberg's dorm room to having 1.63 billion active users each day in September 2018, while Twitter has increased its monthly active users from 30 million 2010 to 330 million 2019 [1], [2]. They both span the globe and allow for political and societal messages to travel between its far corners. Yet, while Facebook claims to be "bringing the world together" criticism is continually being raised. In the fall of 2018, Mark Zuckerberg was summoned to the American Congress to answer questions regarding Facebooks role in the presidential election 2016 [3]. Likewise, the EU have worked to limit the influence of social media giants through legislation [4]. Social Media can thus be seen as a public concern with political impact. Another perspective concerns research on the subject, namely whether there has been an increased interest in the subject or specific aspects of it and which trends and subject areas there are.

2 Purpose

The purpose of the study is to encircle how research articles has depicted Twitter and Facebook by reviewing keywords and terms in abstracts and titles. The study is limited to a political context and articles published between 2008 and 2018. It aims to identify trends and fluctuations as well as subject areas.

3 Methodology

3.1 Data Collection

As shown by Mongeon and Paul-Hus [5] Scopus has a greater coverage of both arts & humanities and social sciences compared to Web of Science. Thus it was chosen as the source for data collection. The search query was gradually evolved and tested in VosViewer to see if it encircled relevant terms. Moreover, randomly selected abstracts were read through. If the article featured either Twitter or Facebook in relation to politics, it was deemed relevant. The search process was thus iterative until a query that yielded relevant results. The final search string was as follows.

(TITLE-ABS-KEY (twitter OR facebook)) AND (TITLE-ABS-KEY (politic* OR election* OR voting* OR government*)) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (EXCLUDE (PUBYEAR , 2020) OR EXCLUDE (PUBYEAR , 2019))

Database: Scopus. Hits: 2415. Date: 2019-11-05

Initially a block containing terms related to human interactions and reactions vis-a-vi Social Media was used but it was discarded since those terms skewed the search towards positive and negative aspects of the subject. Using few but broad terms was intentional, to get a broad and more unbiased dataset. Also, the term Social Media was left out on purpose since it could focus on other platforms such as Sina Weibo or Instagram, thus creating a gap between the data and the purpose of the study. The truncation was used to include words such as political and governmental. Lundberg [6] states that five to ten years is a common time frame in bibliometric studies and it was hence set from 2008 to 2018, thus incorporating the emergence and growth of both Twitter and Facebook as well as political events such as Brexit, several U.S. – presidential elections and the Arab spring. Finally, since citation patterns as shown by Lundberg [6] tend to differ between document types this study focuses solely on articles.

3.2 Data analysis

Once settled on a search query the data was exported and then overviewed in both Excel and Vosviewer, which showed where it needed cleaning. For instance, plural and singular versions such as “election” and “elections” and hyponymy relations such as Trump and Donald Trump were corrected. Some cases were more dubious, such as “election” and “U.S. election” since the country at least to some extent frames the context. In cases of uncertainty, no cleaning was carried out. To standardize the words a thesaurus was created. He [7] points out that co-word analysis is useful to map subjects within research fields and hence it was chosen to analyze the data. Although the main focus was on keywords and co-words in abstracts and titles, frequencies of articles published and citations are presented to frame a context. As he [7] argues, it can be necessary to examine the original documents and thus selections of them are shown under findings. Moreover, citations is one way of showing the impact [8] which further motivates using them in this study.

4 Findings

4.1 About the presentation of data

Since data exported from Scopus cover a lot of aspects, a selection had to be made on which to focus on. These were chosen both to encircle the purpose of the study but also choices made by previous research. Apart from using a similar time frame Cheng, Yu-Wen, Hsin-Chun and Chin-Shan [9] also present the number of published articles and citations. As for the keywords, terms and articles presented in tables they were both chosen by means of a convenience sample but also since listing the top 10 has been carried out by previous research [9], [10]. The articles shown in table 1 and table 2 are the top five, though.

4.2 Citations, keywords and terms in titles and abstracts

It was shown that the number of articles on the subject is steadily increasing without showing signs of saturation. The growth of research articles can be seen in relation to the growth of social media services [1], [2]. The citations, however, are as shown in figure 2 more unevenly spread. They don't accumulate steadily over time and outliers can heavily skew the measure.

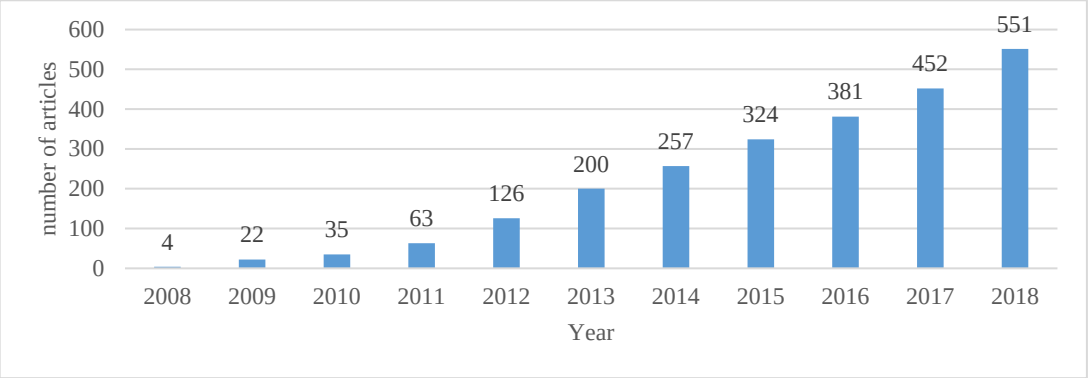


Fig.1. Articles published 2008-2018. n=2415

The figure does, however, show that the number of citations peaked 2012 and then saw a decline. Despite debatable and problematic aspects with citations, they do as argued by Edge [11] indicate influence and interest. Which are then the most cited articles and what patterns can be discerned?

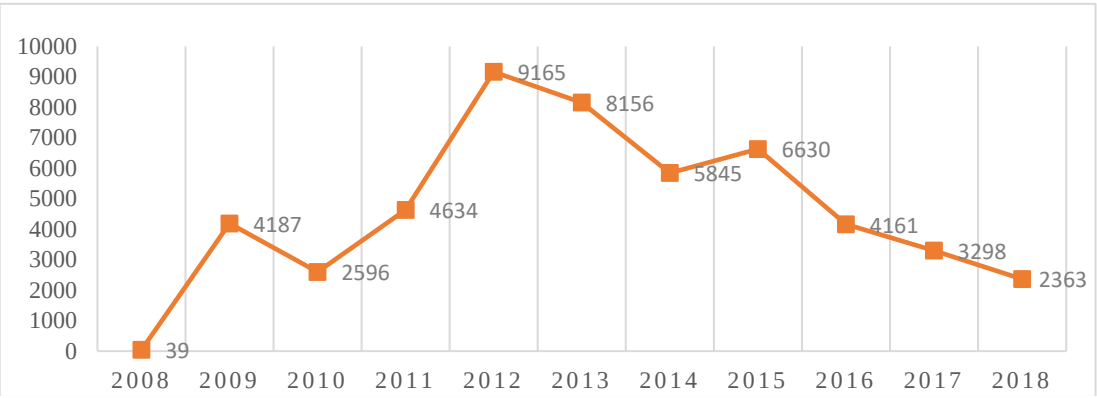


Fig. 2. Citations per year 2008-2018

Table 1. The five most cited articles

Title	Year	Citations
Twitter mood predicts the stock market	2011	1908
Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon	2012	1857
Is there social capital in a social network site?: Facebook use and college student's life satisfaction, trust, and participation	2009	1066
College students' social networking experiences on Facebook	2009	984
A 61-million-person experiment in social influence and political mobilization	2012	877

Table 1 shows that all of the most cited articles were published between 2009 and 2012 and that the number of citations drops quite rapidly. The most cited article, "Twitter mood predicts the stock market," has more the twice as many citations as the fifth most cited one has. Also, when reviewed using citation analysis in Vosviewer it only has one link to other articles. Terms such as social capital and political mobilization are used in the titles. But what of the most cited articles in later years?

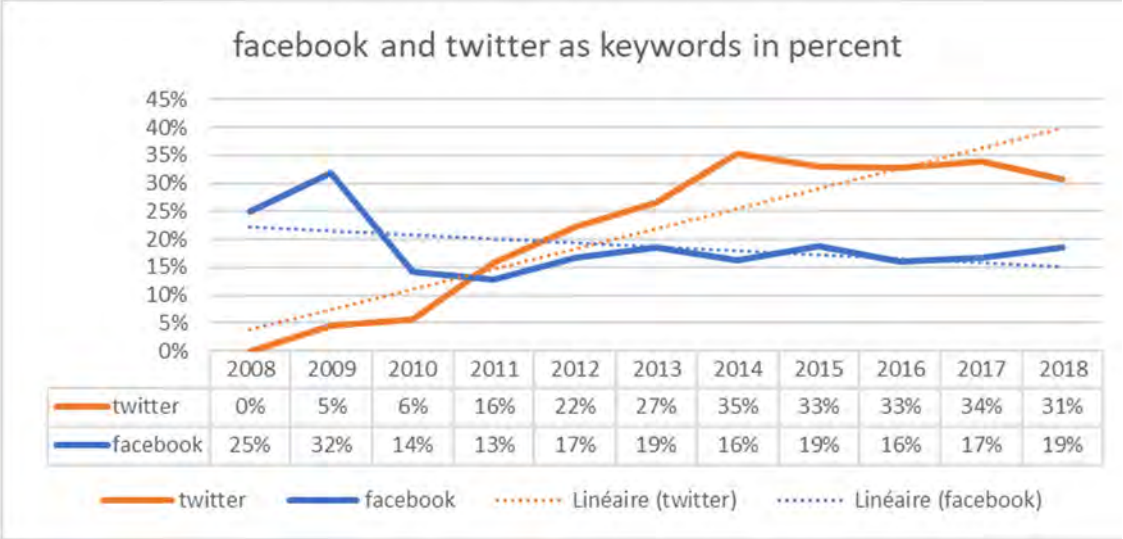
Table 2. The five most cited articles 2013-2018

Title	Year	Citations
Private traits and attributes are predictable from digital records of human behavior	2013	815
Exposure to ideologically diverse news and opinion on Facebook	2015	503
The spread of true and false news online	2018	419
Emotions and information diffusion in social media - Sentiment of microblogs and sharing behavior	2013	404
Echo Chamber or Public Sphere? Predicting Political Orientation and Measuring Political Homophily in Twitter Using Big Data	2014	246

Comparing table 1 and table 2 a shift is indicated, where political aspects are covered to a larger extent. Fake news is brought up, as well as the emotional and ideological impact of social media. "Ideological diverse news" compared with "true and false news" hints at a change over time. Combined it's thus far been shown that the number of published articles steadily increases while citations fluctuate. Also, a shift in which articles are given most citations is indicated. In all of the ten articles presented here 23 keywords were found, of which eleven were used less than ten times in total and seven were only used in one article. Of the 23 keywords, none are explicit political terms. When used as keywords Facebook has generated on average 21.4 citations per usage, while Twitter has generated 21.9 per usage. Another example among keywords in the most cited articles is big data which has generated on average 74.4 citations for each use. As shown in Figure 3, though, the keywords are used together and could thus have a synergy effect. Twitter and Facebook are almost overlapping and both share a relationship with big data. There are differences between the two, though, which will be shown throughout the findings. Compared with table 1 and table 2 microblogging, sentiment analysis and political participation are a few examples of strong nodes.

Fig. 1. Overlay visualization of author keywords with at least five mentions. n=252.

In figure 3 the colors represent the average publication year, thus indicating fluctuations over time. All the articles with fake news and populism as author keywords were published between 2016 and 2018, with the majority (75 %) in 2018. As seen in figure 3, a few other examples of newer keywords are homophily and Donald Trump but also technological terms such as machine learning and sentiment analysis.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
twitter	0%	5%	6%	16%	22%	27%	35%	33%	33%	34%	31%
facebook	25%	32%	14%	13%	17%	19%	16%	19%	16%	17%	19%

Fig.4. Percentage of articles with Facebook or Twitter as keyword 2008-2018

In figure 4 the usage of Facebook and Twitter as keywords during the studied period is visualized and as shown by the dotted trend lines, they're on different trajectories. While Facebook hit a peak in 2009, dropped and then stayed below 20 % Twitter has remained around 30 % from 2014 and onwards with minor fluctuations. As previously noted citations indicate impact and as shown in both table 1 and table 2 there were patterns in which articles were mostly cited.

The top 10 keywords in the 10 most cited articles are presented in Figure 5, with the following keywords discarded: Facebook, Twitter, social media, the Internet, and social network.

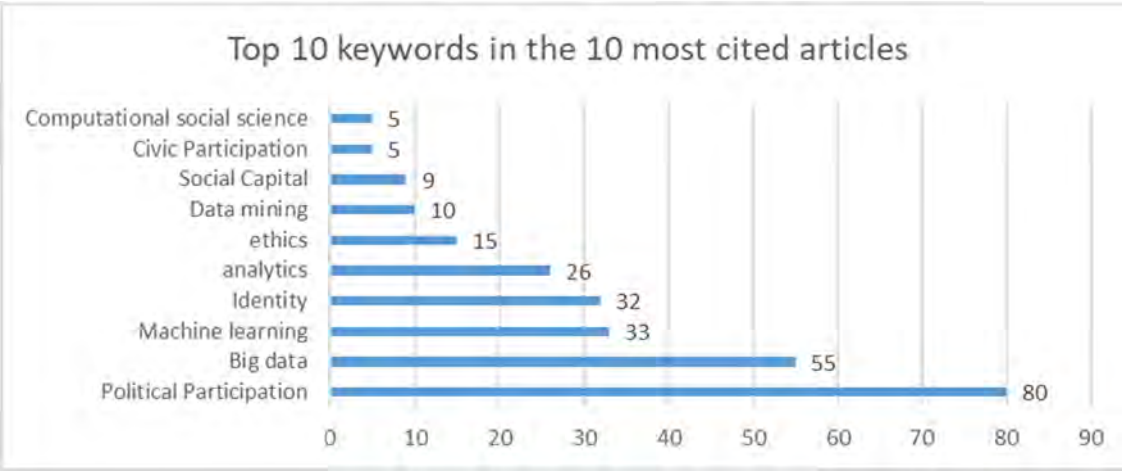


Fig. 5. **Top 10 keywords in the 10 most cited articles**

Figure 5 shows that the most used keywords relate to both political aspects (e.g., social capital and political participation) and technological terms (e.g., machine learning and data mining). The frequency shows how many times they're used throughout the entirety of the 2415 studied articles. They can, however, be interpreted from different perspectives. For example, as big data can be discussed in a political context, political participation can be measured utilizing big data. As in Figure 3, it is once again shown that there are several different aspects. Since citations can as aforementioned, be skewed by outliers, Figure 6 shows the most used keywords regardless of citations but with the following ones removed: Facebook, Twitter, social media, the Internet, and social network.

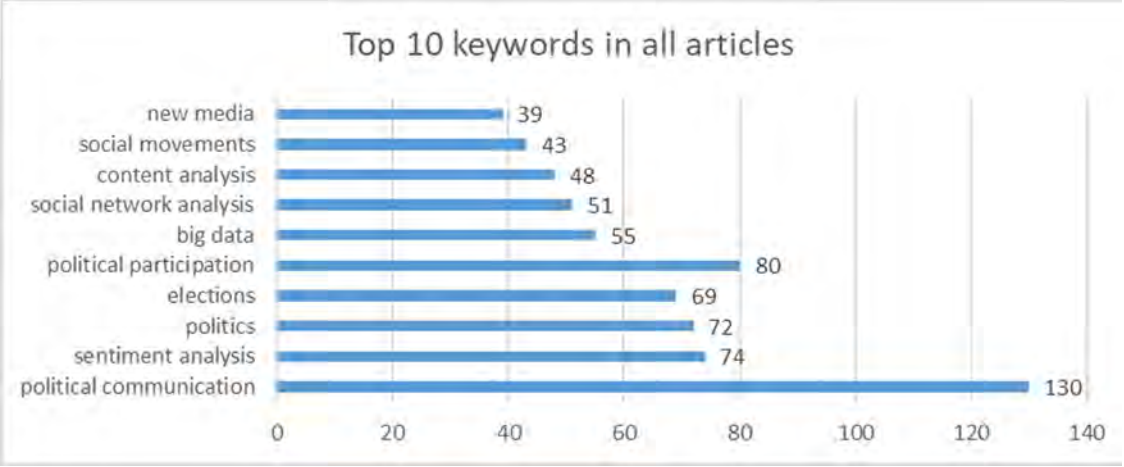


Fig. 6. Top 10 keywords in all articles

Political participation and big data are the only ones that are used in both figure 5 and figure 6, illustrating a discrepancy between the most cited articles and the entire data set.

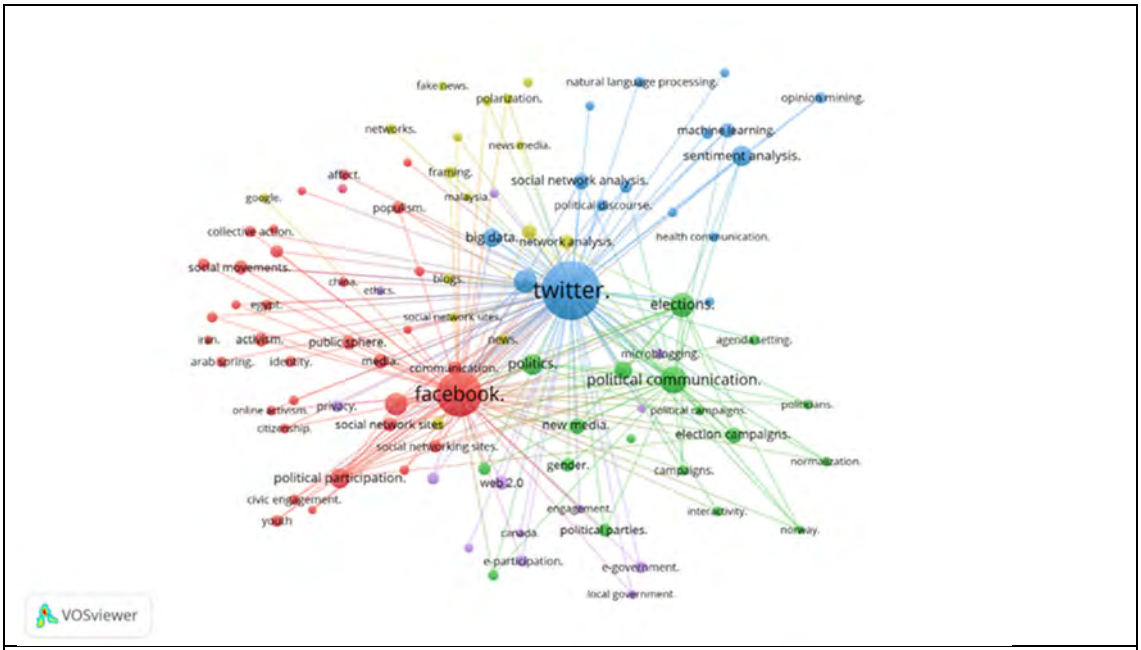


Fig. 2. Bibliographic coupling of keywords. Minimum of 10 occurrences and 10 citations. n=99

Furthermore, Figure 7 shows keywords and their bibliographic coupling, meaning their relationship is based on the number of references they share. In that context, Facebook has a close relation to both political participation, civic engagement and communication while Twitter is closer related to elections, sentiment analysis and big data, further showing that different keywords tend to be used in conjunction with Facebook and Twitter. However, what about the terms used in titles and abstracts?

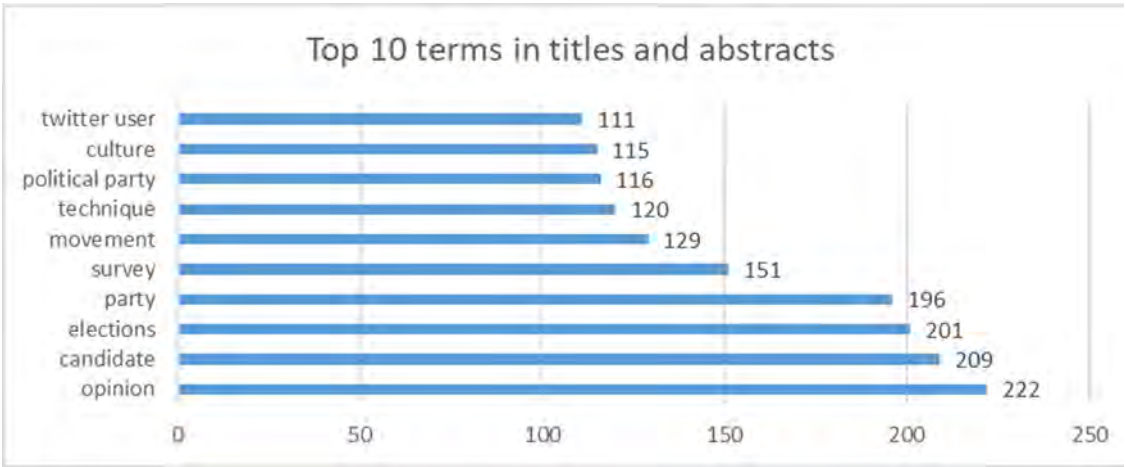


Fig. 7. Top 10 terms in titles and abstracts

Figure 8 shows the top 10 terms used in titles and abstracts, after Vosviewer's relevance score discarded 40 % of the total number of terms. It's shown that words describing distinct political phenomena such as elections and candidate is used to a great extent.

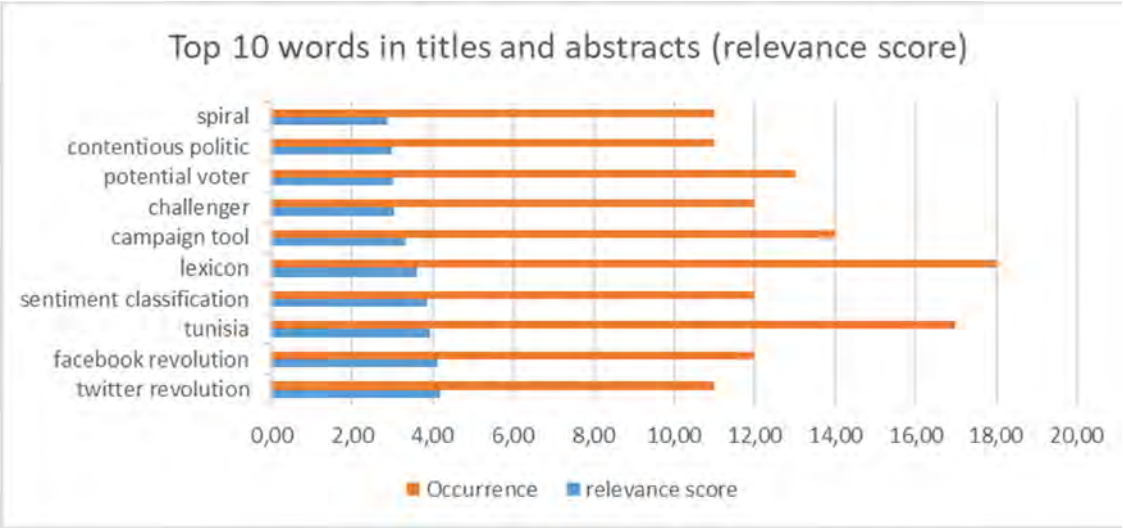


Fig. 8. Top 10 terms measured on Vosviewers relevance score

Drawing back on the relevance score, Figure 9 shows the terms deemed most relevant. That is, the terms that "tend to represent specific topics covered by the text data" [12]. Comparing figure 8 and figure 9, pinpoints that there is a difference in which words are mostly used by authors and deemed most relevant by Vosviewer. They do, however, circle around similar themes. Namely, politics and more specifically political change. Although words concerning elections and voting are represented in both cases, figure 9 also includes terms about revolution and Tunisia, which could point towards the Arabic Spring and the uprising taking place there. To show how the words used in titles and abstracts relate to each other Vosviewer is once again used with its relevance score (see Figure 10). Although Facebook and Twitter are not included in the figure presented here, by reviewing the data and tampering with the relevance score to include them in Vosviewer their belonging cluster is shown. Also, when creating a network *without* the relevance score cluster #1 and #2 as well as #3 and #4 integrates. Table 3 shows selected terms sorted by cluster.

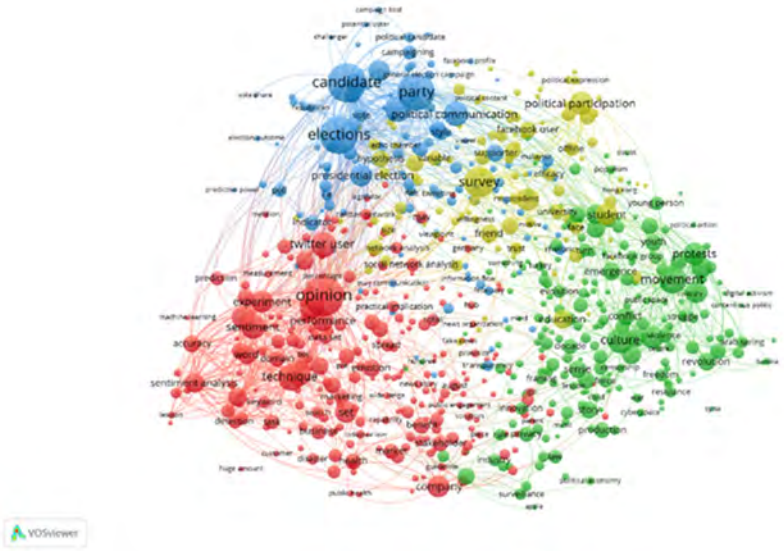


Fig. 9. Vosviewer network of words in abstracts and titles. Minimum of 20 occurrences. Binary counting. n=587

Table 3. Selected terms from clusters in Figure 10.

#1 Twitter (Red)	#2 Political system (Blue)	#3 Facebook (Yellow)	#4 Movements (Green)
Opinion	Elections	Political participation	Movement
Sentiment	Candidate	Survey	Culture
Twitter user	Political communication	Facebook user	Protests
Emotion	Presidential election	Political expression	Conflict

5 Discussion

The purpose of this study has been to identify how research has depicted Twitter and Facebook during a ten-year period. It has been shown that the number of publications on the subject has been steadily growing and shows no signs of abating. During the studied time period, the number of users on Facebook and Twitter have grown a lot and they've utilized new features. Thus, it can be argued that the research reviewed here is on track with the development of the platforms themselves. How great the delay is between the fast developments of tech giants and research on subjects relating to them could be reviewed by future research and the findings in this study could serve as a starting point. For instance, fake news was first used as a keyword in 2016 but mainly in 2018. Also, since the clusters presented here are as described by Makkizadeh and Bigdeloo [13] high in both centrality and density the different subject areas identified are multifaceted and likely to endure over the time to come. Since clusters as argued by He [7] visualizes the linkage of words and thus indicate how a subject is transforming, they've been a central part of this study. To avoid the indexer effect as described by He [7] author keywords are chosen instead of indexed ones, relying like Whitaker [14] on them to be representative. A concern throughout the study, however, has been whether they really are descriptors or "buzzwords." Some indications point towards the latter, since they sometimes trend as indicated by the discrepancy between which keywords are used most of the whole dataset compared to the most cited articles. To strengthen the findings the keywords are thus supplemented by words used in abstracts as titles. Title words can, however, be used to address specific target audiences and the same words can have different meanings in different texts [7]. This should be considered when reviewing the findings.

Although closely related to the network maps presented here showed that Facebook and Twitter tend to be used with different terms. It can thus be said that the findings reflect their divergent features. Based on previous research [15], [16] they can be categorized in two different aspects of social capital, namely bonding and bridging. Whereas bonding is based on strong ties between individuals from similar backgrounds and beliefs, bridging depicts weak ties between individuals adhering to diverse backgrounds and beliefs. Due to its openness, Twitter is thus categorized as bridging while Facebook, where individuals accept friend requests and invite each other into groups fall into the bonding category. Based on this categorization it could be argued that Twitter is more efficient for reaching new target audiences and recruiting voters while Facebook is more suitable for mobilizing specific groups. Although partly indicated in the data presented here, that distinction is not obvious in this study. Facebook and Twitter have a strong relationship as keywords and are often used together. Moreover, they tend to be used in conjunction with similar terms. That said, there are differences. Twitter more often relates to different data technologies (e.g., opinion mining and text mining). However, the discrepancy between the two is more distinct when reviewing words in abstracts and titles. Here they can more clearly be divided according to the bridging and bonding categorization and the implications described above. For example, Facebook shared a stronger relationship with terms relating to mobilizing groups while Twitter is rather associated with opinions and emotions.

But is the effect that social media is having on its users really that new? Spohr [17] ponders whether it's really algorithms that have created the behavior we see on social media or if it's always been there and rather can be explained by psychology and behavioral science. Historically, people have sought out social settings that they prefer. Furthermore, Spohr [17] notes that in its early day many theorists thought that the Internet would make political differences overcome social and geographical boundaries. Hong and Nadler [18] argue that major implementations took place between 2010 and 2012, though, when a lot of politicians begun using social media to a large extent, which correlates with when the output of articles began to grow according to the data presented here. As for the contemporary discussion around polarization, it began largely in the wake of the U.S. election 2016 and the referendum on Brexit [17], which is also shown in the usage of keywords within this study's data. The political impact of social media can also be shown in a contemporary phenomenon such as the Occupy movement and the Arab Spring, according to Gerbaudo [19] who wonders whether the mobilization features of social media would have come into effect without a change in ideology. In either case, the connection to movements in general and the specific ones mentioned above are also reflected by the findings especially in relation to Facebook due to its bonding qualities. Gerbaudo [19] further notes that the Internet has shifted from harboring idealism and counterculture to becoming a "mainstream" arena for ordinary citizens and their everyday problems. The growth and multiplicity of keywords and terms used combined with both of them become more oriented towards practical implications suggest a correlation with this development. Due to a greater coverage and representativeness of the users on social media, the platforms likely become more usable in a political context. As aforementioned this is indicated in the data that shows a growth of terms and tools such as sentiment analysis, text mining and voting prediction.

6 Conclusion

- The findings show a great increase in papers published from 2011 and onwards, showing an increased interest in the subject. This is in line with the growth of the platforms themselves. Centrality and density of the clusters indicate that the subject is not saturated and unlikely to abate in the near future.
- The study confirms that citations per year are easily skewed by outliers and that there is a discrepancy between the most cited articles and the data as a whole when it comes to the most popular keywords.
- Trend lines shows an increase in Twitter as a keyword while the trend for Facebook although fluctuation shows some signs of abating. This is also in line with the network maps where keywords on the rise, such as big data and sentiment analysis, are closer related to Twitter. As argued in the discussion, Twitter could due to its bridging feature be utilized more for reaching new voters and thus tipping the scales in elections, making it useful in a political context. That said, Facebook is likely to remain as a research subject.
- As argued in the discussion, the research reviewed by this study is also in line with major societal events (e.g., Brexit and the Arabic spring). Moreover, combined with the growth of articles published and the pattern of keywords and terms used it is indicated that the research articles reflects and moves alongside how society evolves. Pondering over causality, though, one could ask whether it's the research community that affects society or if it's the other way around.
- Drawing on the findings and data here, future research could focus on the development of a specific cluster or set of keywords. But since both the platforms themselves and technologies relating to social media evolve rather fast, future studies aimed at a later

time span will likely show new aspects emerging which is in line with the reflections of Hong and Nadler [18].

Acknowledgement

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How misinformation and disinformation affect the organization and its employees' performance in the digital era

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Abstract. It is crucial to understand how information, when well managed, becomes the primary factor of intelligence and competitive advantage of an organization. Information management makes an essential contribution to achieving the organization's mission and strategy, affirming its business or area of operation, making its human resources and tangible resources profitable. Information is therefore so indispensable to the organizations that they often structure and classify it based on its organization, its functions and activities, that is to say, based on documentary production, information flows between departments, archiving and proof that this information constitutes. In 21st century organizations, where the digital paradigm is omnipresent, it's crucial that the information manager be aware that misinformation and disinformation are real threats to quality information and that can jeopardize the success of effective information management. Through the literature review, we intend to reflect on various theoretical issues, highlighting ideas and good practices to combat the danger of this negative reality. These include the need for all employees of an organization to have media literacy skills, which can be fostered and formally provided by the institution through lifelong learning.

***Keywords*:** strategic information management; informational functions; actors of strategic management; misinformation; disinformation; media literacy

1 Introduction

Information is the most precious asset of an organization. At the age of information and knowledge we live in, with technological and scientific advances easily accessible to all organizations, the ones who have more information and know how to manage it more suited to their vision and strategy, will be able to gain competitive advantage faster than their competitors. Realizing the concept of competitive advantage as something that an organization does differently and/ or better than the organizations that compete with it in the same area of operations or business, it quickly becomes clear that the information obtained, filed, processed and produced by an organization is what gives it competitive intelligence to survive and succeed in its environment. The analysis of the environment, competition, politics, legislation, economy, society and technology allows the anticipation of trends, the prediction of eventual problems and the most effective decisions to achieve the previously defined objectives. All these studies, analyses and projections, which enable organizations to make decisions and gain knowledge and competitive intelligence, consist of the collection, processing, production, dissemination and use of information. In the 21st century, in the digital age, everything changes and happens very quickly. Access to information exists on every mobile or steady device, with an Internet connection, and thus information has become a weapon more accessible to everyone, allowing for faster learning, anticipation and greater ability to innovate [1].

Information management has its origins in documentary production, essential to the functioning of any organization. Only with the creation or production of documents can the data and information that enter in an institution be filed. Data is processed and becomes information

that, in turn, when acquired and processed through the perception, understanding, concepts and values of individuals, becomes knowledge. Information managers are, therefore, indispensable actors in the management of organizations, they are the organizers of knowledge and the respective forms of information's distribution by organizations to their human resources.

In the digital era, organizations and information managers face a greater challenge in information management: the speed and ease with which information is disseminated through information and communication technologies. But also, the "dark side" of the digital era, which materializes in the misinformation, decontextualization, lack of rigor and intentional or involuntary errors to which the employees of organizations are subjected [2].

The fight against the dark side of the digital era is accomplished through investment in information and media literacy. Humanity faces more than ever the daily floods of fake news and its sharing on social media with millions of people. It is misinformation and disinformation disguised as news and removed from its original context. Only the most enlightened and prepared are able to deal with the information and communication technologies and will be able to distinguish information from disinformation, misinformation and fake news, distinguishing the truth from purposeful deception conveyed by any digital platform. As the Commission's Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions States in 2018 "The lifelong development of critical and digital skills, in particular for young people, is crucial to reinforcing our societies' resistance to misinformation." (Our translation) [3].

2 Strategic information management in the organization

By the end of the twentieth century, we were witnessing an abrupt development of information technology, with the Internet's global spread booming in the 1990s. Information was quickly becoming easy to get and available to a large part of the world's population, organizations included, of course. We have witnessed an excess of information at the time, and a need to separate excessive information from important and relevant information had begun to emerge. As early as 1971, Herbert Simon had already approached the information overload subject, claiming that there was a need for computer systems to process all the information in excess on that date.

The investment made by organizations in Information and Communication Technologies was beginning to grow rapidly, and with this, also an investment by individuals in their own training in new information technologies. In this highly competitive environment, managers soon realized the need to devise strategies for information-based organizations as a valuable asset for competitive advantage [4].

Lesca and Almeida [4] explored the strategic management of information, deepening their study and finding strong arguments that reinforce the extreme importance of information in organizations, such as **decision-making support** - decisions must be made based on complete, current, accurate, contextualized and appropriate information and on time in order to be as appropriate and effective as possible; **production factor** - with the relevant information and its proper management, there is a greater probability of developing products and services with higher added value for consumers, which is a key aspect for business competitiveness; **synergy factor** - information's classification and distribution are essential to obtain positive results for an organization; each department and employee must have the necessary, correct, up to date and prompt information to carry out their activities and know the right path to assist the organization with their work; otherwise they will not communicate effectively between them and doubts, fears and poor performances will arise; **determinant factor of behavior** - at the

internal level of the organization, information is crucial for all human resources to be aligned with the mission and strategies to follow, performing their roles and tasks for the same purposes; externally, since the research and collection of information from the market, stakeholders and competitive environment, to information transmitted from customers, suppliers and competitors or even public opinion, information is one of the most important strategic factors.

Information management thus carries a great responsibility for managers, from research to document production, processing, classification, update, archive or retrieval, it's a process which must be totally appropriate for each organization. In addition, certain rules should be followed so that information's organization plans can be readily perceived or transposed, if necessary, to other environments and contexts such as different computer platforms.

Nowadays, most organizations have their organic structure and functions based on an information system or multiple integrated subsystems, which may include all the organization's functions and their activities, from customer management, billing, procurement, and related documentation produced by each of these activities, to data received by the organization, filed information and so on.

Most of these information systems are supported by computers due to the amount of information they support and the ease of information's distribution as they cover all stakeholders, activities, documents and their management, functions and people allocated to them.

The informational functions in organizations therefore involve the information management, the information systems' planning and implementation. It is also crucial to consider the maintenance of these same systems, the contribution to the employees' training, which are the users of information systems and so the fundamental contributors to the information systems' design and their maintenance over time.

2.1 Components of Strategic Information Management

Information management cannot fail to encompass the components of its life cycle, consisting of: 1) documentary production; 2) organization and archive; 3) distribution and 4) use of information.

As for those who manage the information, Tarapanoff et al. [5] mention that "Traditionally information managers who maintain information systems, decision support systems and similar operations in the public or private sector have never seen themselves as part of the same profession as librarians, archivists, or information scientists" (p. 5). However, their functions consist, to a reasonable extent, on the same functions as the professionals referred, because the information's inherent characteristics are the same in any of the organizational environments, as well as its life cycle.

Thus, strategic information management covers, regardless of the organization in which it is implemented, very similar and common activities to these professionals or actors of strategic information management, since the information's **acquisition or production**, where the existence of institutionalized practices is important and also, for which there should be norms for naming the produced documents, so they do not lose track of any; with regard to the **organization and archive**, it is crucial to keep in mind that the purpose of information's organization is to contribute to improving productivity and ensuring the competitiveness of organizations, optimizing the identification and access to documents and preserving institutional memory; in the information's **distribution** phase, it should be considered the enterprise architecture, the information systems and/ or subsystems, the participants, the information flows, the roles responsible for the activities, the distribution of information, the human resources' training, the information system's maintenance in order to keep the whole

information system useful, coherent, efficient and effective, because only then can the organization's investment in these information systems be justified.

Finally, in the **use** of information, which is the ultimate goal of information management, the manager must do all his work to achieve the organization's desired results enforcing its previously set and communicated objectives and ensuring the maintenance of information systems.

3.1 The actors of strategic information management

The actors of strategic information management are then those who intervene in the process of information management in the organization. Tarapanoff et al. [5] indicate **seven profiles**: **information managers**, who ensure the information provision to those who need it; **knowledge workers**, who place information at the service of organizational and production management, that is to say they convert information into knowledge; **knowledge managers** - knowledge management professionals - Chief Knowledge Officers – which are responsible for the strategy and implementation of information assimilation methods within organizations and for updating, refreshing and modernizing employees' knowledge; **knowledge engineers**, who develop the means to carry out the direction the processes should take; **knowledge management specialists**, who are responsible for knowledge transfer; **information content specialists**, who provide information services (content); and **specialists in the use of intelligent tools**, who are information technology specialists.

Given the amount of information that floods our devices on a daily basis, essentially over the Internet, it is crucial to distinguish what is relevant and true for the organization, making it urgent for these information managers to effectively play their role in organizations in order to prevent the loss of information, underutilization of the existing knowledge and the dissemination of disinformation that ultimately may lead to complete loss of competitive intelligence and advantage over the competition.

3 Information, decontextualization, misinformation and disinformation in the digital era

Perceiving information as a more or less extensive set of data, properly processed and interpreted in the light of a given context, area of knowledge or situation, it will be easy to conclude that disinformation and misinformation consist precisely in the reverse of this process and that decontextualization alters part or all of the meaning previously attributed to that same data. In another sense, of a more qualitative nature, information can be understood as a human and social phenomenon, being intrinsically linked to the actions and human nature, as a living being that has emotions, feelings and an unavoidable need to communicate. The information, according to Malheiro da Silva (p. 24) [6]:

> *It is, therefore, between knowledge and communication, against the background of upstream the psychosomatic totality of the human being (…) and downstream, furthermore, lies the human capacity for communication, since the communication process cannot happen without the messages, the contents, in a word, the Information. (our translation)*

As a phenomenon inherent to the human being and amenable to transmission, through communication and after internal processing by the transmitter so, therefore, imbued with subjectivity, the information's contextualization consequently plays a major role in its classification and sharing, or that is, it is always necessary to take into consideration the context

in which the information is produced, distributed, transmitted and received, so its meaning can be preserved; otherwise it may become decontextualized or altered.

What distinguishes disinformation from misinformation is the very intention in the production of data, message, and context that is whether the error and the possibility of others' deceit is purposeful, intended and disseminated for economic advantage or to deliberately mislead and therefore we are facing a “fabrication” of disinformation [3]. Or, on the other hand, if there was no purpose to deceive but rather a misinterpretation, intrinsic to the receivers themselves, or the search occurred in untrustworthy sources of information and then shared the unverified data, incomplete or inconsistent with the course of events, in this case we are facing misinformation [7].

3.1 The ease of information dissemination and disinformation/ misinformation nowadays

In this society we live in, surrounded by information overload on the Internet and other media, our interactions are mostly mediated by technology. We are increasingly seeing a departure from the physical world and the strengthening of the virtual world [8]. We have our smartphones and tablets with us all the time, at our disposal every minute, the willingness for information acquisition and rapid sharing, decontextualized and without careful attention to the sources and the way in which information is disseminated, makes us vulnerable and conducive to the acquisition and sharing of misinformation, disinformation and fake news.

We consume too much information every minute in our daily routine, whether it is in our personal lives, at work or in the classroom, while we are traveling or doing various tasks simultaneously. With these constant floods of information, we are often unable to confirm all sources and facts, we do not know the context, due to lack of time, or even due to technologies and digital illiteracy. "Technology symbolizes a type of evolution, but it does not necessarily make the man more ethical and wiser, nor is it synonymous with the proper use of information" (p. 3, our translation) [8].

However, at the same time, we are also producers of information, or contents, using social networks as vehicles for the information we want to share. Dissemination of information and misinformation has never been easier than it is today.

3.2 Factors that most contribute to disinformation/ misinformation in organizations

At the professional level, in organizations, the situation is practically the same, that is, despite the institutionalized policies and practices of searching, processing and archiving information and cyber security, desirably existing in each organization, access to information and its spread is as easy as in the private life domain.

Much of the search for information is carried out in the professional field, since it aims to fill one or more gaps in knowledge with the aim of achieving better performance on professional activities. In addition, there is also the growing phenomenon of working from home, with authorized access to the organizations' databases and computer systems that technology provides us with.

If it is true that the successive advances in technology have been providing comfort, greater life expectancy, ease of contact with remote places, faster learning and the execution of various tasks by the machines, resulting in greater productivity, it is also a reality that we are obliged to ubiquity and connectivity almost 24 hours a day.

The fast pace that we impose on ourselves, or that organizations impose on us, has its price in terms of health and the quality of our work. We work in our workplaces and at home, but we also take leisure to our workplaces with our mobile devices and our social networks. There is no

longer a clear boundary between the personal and family environment and the work/professional sphere.

This entails risks for individuals and organizations, since, by opening doors and various accesses to employees, such as databases, emails, and information that should not be accessed from outside the organizations, through the Internet or stored in the cloud and on employees' devices, information can be accessed easily and illegally by anyone else. This way it's possible to ignore protection barriers, such as firewalls against cyber-attacks, exposing the information to possible manipulation, which may range from the decontextualization, alteration and violation of personal data that may exist in organization's databases to just the discrediting of an organization [2].

If not addressed or tackled in a timely manner, these weaknesses will lead to misinformation to the organization's employees, decisions made based on errors and mistakes that could prove fatal. It is up to information managers to counteract this global trend by taking measures in terms of information protection, care in its search, archive, internal and external dissemination of information and training of their human resources, so that disinformation and misinformation can be stopped or minimized.

3.3 How to minimize the effects of disinformation/ misinformation on organizations

The players in strategic information management are professionals who must have sufficiently advanced and up-to-date information and digital skills. They are the ones who implement, manage and take preventive, maintenance and corrective measures for organizations' information systems. Information architecture, the computational systems that will compose and operationalize it and security are the first factors to consider.

In parallel, it is not possible to think about these components of information systems without including their users - the employees of the organization - for whom the information systems are designed and who should be an integral part of their design and development, because they are the ones who will use them and, therefore, they will have to know sufficiently, know how to use and know the information flows underlying them and their stakeholders.

Assuming that the factors described above were considered and the security measures were ensured, maintained and periodically renewed, the daily focus of the information managers should then be on the organization's employees and the use they make of the systems and information.

From the search for information to the performance of their activities, the organizations' employees must follow established practices, so as not to put at risk the reliability of the information they acquire nor the organization's security or operations.

The Internet, as we know, is today one of the main sources of information, if not the main one, and there are essential precautions to consider in the search for information, in this case, essentially the websites where the information's search occurs. When we begin a search for information, the results are infinite. It is difficult to distinguish between thousands of websites. How can we choose the correct, the up-todate and the reliable information?

There are several indicators on a website that allow us to understand if it is reliable, credible and up to date. These quality criteria have been identified and listed over the years by many information specialists. Among them we can find some features that stand out immediately when visiting a website, such as the indication of the website's ownership, visible contacts and location in case of need, the factual information they expose, its depth and authorship, sources from which the information comes, degree of content updates, information objectivity and writing without errors [9].

On the contrary, websites that convey disinformation or incomplete, subjective and biased information are often outdated, do not present the sources of information, their authors or even their ownership and their contacts.

So, among the various criteria for assessing the reliability of a website, the ones that stand out the most and are therefore easier to detect are authorship, authority, accuracy, objectivity, actuality and depth of information. If these characteristics are not present in an information source, it is ideal to look for other sources of information to ensure the truthfulness, reliability, objectivity and integrity of the information. Thus, in order for employees of organizations, and indeed the whole of society, including young people, who have been using computers and smartphones from an early age, can use technologies to search and find reliable information and, consequently, on behalf of their personal lives and the organizations it is essential to foster and develop informational and media literacy in society.

3.4 Information skills and media literacy: How can they contribute to fighting misinformation in organizations?

More and more people, and mostly young people, are turning to social networks as a source of information, which entails risks of sharing and belief in misinformation, subjectivity and the spread of fake news at an overwhelming pace, initiating and strengthening real global campaigns of disinformation and misinformation [3].

While in some cases, this creation and sharing of misinformation is clearly deliberate, in others, the sharing of misinformation occurs through the simple desire to share information that is considered true or relevant, without prior verification. Thus, in order to combat disinformation, in a world where we have the capacity to disseminate messages at a distance of a few "clicks," it is essential to have the capacity to know how to use technologies, distinguish information from disinformation and misinformation and to develop critical thinking.

The informational skills required for the use of technologies and the knowledge and understanding of how they work for a dignified, inclusive and participatory life in society today are already taught from the beginning of school age, or even earlier. However, it is important to foster lifelong learning in schools and in all other organizations as information and communication technologies and social trends change at a very fast pace.

Media literacy then emerges as a way to combat misinformation by educating people to critical thinking about everything they read and see in the media, whether it be news, advertising or publicity. The algorithms of social networks and search engines on the Internet were designed to highlight what is convenient for their users and their interests, thus critical thinking, raising questions and scepticism about what is seen, read and heard is indispensable to the exposure of what is hidden and disguised by subliminal messages.

Briefly, media literacy education requires, as one of its principles, the active and critical questioning of information, i.e., "active inquiry and critical thinking about the messages we receive and create" (p. 7) [10]. Media literacy not only contributes to information-minded, information-demanding professionals, skeptical about the information they find and demanding about the sources of information, but also develops information's verification and confirmation attitudes and, thus, promotes an informed society of citizens less susceptible to misinformation and fake news [11].

4 Conclusion

In the globalized world in which we live, where information and communication technologies allow us to obtain information at every moment and to be not only receptors but also creators

of information, both professionally and personally, with the mass use of social networks, it becomes imperative for information managers, in the performance of their duties, to protect organizations and their employees in order to obtain reliable information, fighting disinformation and misinformation and providing conditions for the performance of organizations' professionals, in this digital era, to be improved and more productive.

Promoting and encouraging information and media literacy and firmly investing on the continuous training of employees over the years, it will be possible to minimize the effect of disinformation on organizations, not least because, while it is true that information skills and media literacy are not capable, by themselves, of changing the values of individuals and, therefore, preventing the existence of misinformation, they are at least “weapons” that can stop its dissemination.

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How we can use smart classrooms in library usage lessons?

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Abstract. Following the international examples and the trends of the 21st century, using smart devices in the classroom is spreading out in Hungary too. Teachers, device producers and IT companies recognized the advantages of using these tools and technologies in the classrooms. Since 2016 in Budapest and throughout there are more and more schools with smart classrooms, owing to the Digital Education Strategy of Hungary.
In the school year of 2018/2019 my school, the Budapest IX. Kerületi Szent-Györgyi Albert Általános Iskola és Gimnázium got so many ICT tools, to use them in everyday teaching. This year we got a smart classroom too with tablets, a smart board and a laptop too. Free use of ICT during classrooms is new to our children. Keeping obedience during lessons are hard because most of the time our students do not think about their ICT tools as a work tool.
My research has a central question. How smart classrooms can change the students' learning motivation, and how their performance changing.
In this research, I examined 10-12 year-old students in library using lessons. The motivation changed radically. They do not like library using lessons, but after the first class with the smart classroom, they changed their mind. They learned proper use of the library easily. Before these tools, using alphabet was hard for some students, but nowadays they are much more confident with it.
In the future, I would like to try out these new technologies with students up to 10th graders (16-year-old students).

***Keywords*:** smart classroom, gamification, ICT tools, education, intelligent environment

1 Introduction

Following the trends of the 21st century, it seems like the use of smart devices in education is on the rise in Hungary as well. Teachers, manufacturers and IT companies recognized the opportunities in integrating devices and applications into education; therefore, these tools are used more and more often in classrooms, too. Since 2016, a growing number of schools in Hungary have set up smart classrooms; their use and the evaluation of the experiences are related to the improvement of the Hungarian Digital Education Strategy.

The Budapest IX. Kerületi Szent-Györgyi Albert Általános Iskola és Gimnázium also joined the program. For this reason, in the 2018/19 academic year, the government subsidized projectors were installed in the school's classrooms. Teachers received laptops, and the ICT devices used during lessons are tablets equal in number to the group headcount (13). In the 2019/2020 academic year, a smart classroom partially connected to the program will be set up, which includes 30 tablets, a teacher laptop and a smart board.

The legal and open use of ICT devices is currently a great innovation in the eyes of Hungarian students. The use of projectors and computers, and using tablets and smart personal devices for educational purposes are not yet widely spread practices. In my research I intended to ask the question of how these devices can be effectively implemented in library pedagogy and in use of library classes.

1.1 What is a smart classroom?

The smart classroom is a user-friendly environment that acts as a conductor between the learning process and the student. It is typically an easily manageable environment with customizable configurations. A basic expectation is that the users must easily hear and see everything that happens through the devices, therefore aside from tablets and the teacher computer, a smart board that can be connected to a computer, or an interactive board is also necessary. In the latter case, a high capacity projector capable of sufficiently projecting pictures and videos is also essential. The lighting in the room has to be ergonomically adequate as well. In addition to lighting, the audio system is also a fundamental part of the smart classroom. Ventilation has to be sufficient in these classrooms as well, as the simultaneous operation of several electronic devices can generate a considerable amount of heat in itself.

1.2 Categories of smart classrooms based on level of facility

We can differentiate between several categories of smart classrooms based on the level of the facility. One of them is the so-called "essential *smart classroom"*, which contains most of the basic equipment. It usually consists of a smart board, a laptop, a projector, and a control panel. An extended version is the so-called *smart interactive classroom,* which contains everything an *"essential smart classroom"* does, but the equipment is expanded by laptops or tablets equal in number to the headcount of the group, and a teacher work station. The special aspect is that the student's devices are connected to a central screen, which is controlled through the teacher work station. A third category we have to mention is the so-called *"traditional basic AV/TV smart classroom"*. The special feature of these is that a so-called media locker is installed, which includes a television, and a DVD/VHS player aside from the other audiovisual devices that are present in the previous two categories. The fourth, most extensive category, is the so-called *"two-way video smart classroom"* . This contains every piece of equipment found in the previous three categories, but there are also additional web cameras and microphones included. These are put to use mostly when there is a large number of students not being able to attend the class personally for some reason. Remote access and online connection to the class can be provided for them this way. The opportunities of a classroom like this can be best exploited in blended learning or remote education.

1.3 Furniture of a smart classroom

When furnishing a smart classroom, the particularities of the furniture have to be taken into consideration as well. It is essential to have mobile chairs and desks, as they do both group projects and individual work easier. One of the cornerstones of constructivist pedagogy is the realization of cooperative learning organization. It is important for the teachers to base their lessons on teamwork. Teamwork can not only improve students' lexical knowledge, but other skills as well (e.g., communication skills, social competences, cooperative skills, problem-solving skills, etc.). A smart classroom can in a way be a basic tool for inquiry-based learning.

An important element of the furniture is a cabinet or charger cart to charge and safely store tablets and other devices and which can easily be transported from one classroom to another if needed.

1.4 What is a smart classroom good for?

In 2016, the Hungarian government accepted the Hungarian Digital Education Strategy, which ensures the acquisition of digital competencies on every level of education. The core of the

strategy is to make sure that no student leaves public education without the digital competencies necessary on the labor market of the 21st century.

At the beginning of the class, the teacher can test the knowledge of the students by using the opportunities provided by the smart classroom. Some applications are great to review the material of the last lesson or summarize a topic. Most of the applications – satisfying the needs of Z and Alfa generations – give immediate feedback about their performance, which makes evaluation easier for teachers.

Stiefel Digital Division listed the advantages of smart boards in education;

- They state that by using smart boards, both teachers and students enjoy their work more.
- With smart boards, several formerly used technologies can be integrated into one device.
- It allows a much greater freedom in using and customizing illustrative material.
- Work done on the board can be saved, printed and reused later.
- The wide range of illustrative material helps adapting to the different study strategies of students.
- It can help connecting pictures, graphs, and animations; we can move in any direction quickly within the material.
- Putting together a presentation for a smart board requires the logical review of the topic, which results in the continuous updating of the existing lesson plans.
- The material of the lesson can be shared, and sent to students, teachers or other groups they want to include.

2 Methodology

In the beginning of the 2019/2020 academic year, a smart classroom was set up in our school. This contains 30 tablets, a smart board, a teacher laptop and the “smart pen” used for the smart board. The technology is currently under testing. It is not yet widely spread. According to the suggestion of the developers, we will only start introducing it into regular use and integrate it into lessons after the completion of the 30-hour accredited training. The training will be over soon, and as a result, around 30 members of the approximately 90-person faculty will be able to use the smart classroom, its equipment and the possibilities it holds.

During my research I primarily focused on examining literature suggestions, and practices and applications from abroad. When choosing the applications, as one of the librarian teachers of our school, an important factor for me was to be able to connect to the organization and execution of use of library lessons, and to be able to use the possibilities of the system during my own lessons.

This present study is part of a longer process. As a first step, I wanted to examine applications that would fit the Hungarian educational system, could be used in educational practice, thus contributing to the development defined in the Digital Education Strategy. In the result section, I will briefly introduce these applications, and I will discuss their practical use further in a later study.

3 Results

As a librarian teacher, I have to take part in the life of the school in many different ways. Aside from running the school library and providing documents and information, I also have to teach use of library classes and support my colleagues in their use of library classes. In the next section, I will introduce applications and websites that can be used in digital classrooms, and thus can be integrated into Hungarian education and the Digital Education Strategy.

The applications are sorted from general to specific ones.

3.1 LearningApps

"LearningApps.org is a Web 2.0 applications, to support learning and teaching processes with small interactive modules. Those modules can be used directly in learning materials, but also for self studying. The aim is to collect reusable building blocks and make them available to everyone. Blocks (called Apps) include no specific framework or a specific learning scenario. The blocks are therefore not suitable as complete lessons or tasks; instead they must be embedded in an appropriate teaching scenario." [1]Teachers have many opportunities to make their lessons more interesting, creative, and most importantly more interactive with these blocks. The planning is time-consuming, but using the blocks and seeing the satisfied faces of the students compensate for the energy investment.

3.2 JigsawPlanet

The game provides an opportunity for students to solve the puzzle individually, in groups, or as a class together. After a very simple registration process, the algorithm creates a puzzle from the picture chosen by the teacher. The method of the game can easily be integrated into the lesson, since we can choose any picture. Z and Alfa generations are typically visual, so this can be a great tool to establish or summarize the topic of the lesson. The teacher can then initiate a discussion about the picture, which effectively improves the students' comprehension, composition and social skills. The game can be used excellently in foreign language lessons.

3.3 Kahoot!

Kahoot! is a game that can be played both individually and in groups. The teacher can put together a quick quiz with a few questions and put it on the screen, and students can connect to the game using their own smart devices. It is a great way to review the content of the previous lesson, and to summarize the material of the current one. With the game the pop quiz at the beginning of the lesson can be done quickly, since at the end of the game there are several rankings from different perspectives visible to everybody.

The user-friendly platform is easy to use; it simplifies and quickens the work for teachers. Very young, elementary school children can quickly understand the user platform, too. In my experience it is a well-beloved tool to use in class among teachers. The game also motivates students to prepare for the classes in order to perform better.

3.4 Mentimeter

Mentimeter is an interactive presentation software with an online platform. It helps include the audience in moving the presentation forward. The listeners can create word bubbles next to the traditional presentation and also solve quizzes. When editing, we can choose from several question types. The most popular one with students is the word bubble, but an option to vote or express opinions can be just as spectacular.

With word bubbles, the more people send in the same phrase, the bigger the font will become and the more significantly it will appear on the screen. The change is immediate and noticeable. Following the analogy of Kahoot!, the members of the audience can individually connect with their personal smart devices and solve the task on the screen.

[1] What is learningapps.org? https://learningapps.org/about.php (last retrieved: November 21. 2019.)

It can be used very well during class discussions to settle a controversial topic, since the answers are completely anonymous. Furthermore, it is a great tool to review and summarize topics. It can be a refreshing pop of color during class, which can make it a beloved game both among students and teachers.

3.5 WordArt

WordArt is a quick and easy online word bubble making application. The number of words we can upload is unlimited, and we can use eye-catching shapes and colors. Another great advantage is that the entire word bubble we create is customizable. The user-friendly platform is easy to use for younger students as well – just as it is already very popular among fifth grade students in our school. The final picture can be saved in any format. A great advantage against other applications is that registration is not a prerequisite, and the final picture can be accessed free of charge.

The word bubble below was created by one of our fifth graders, and it contains library-related phrases he could think of. The student used WordArt to create the word bubble.

3.6 Honfoglaló (Conquest)

A great example for the improvement of informational knowledge and general literacy is an online game called *Honfoglaló (Conquest),* which is already available in family board game form as well. The structure and the operation of the online version have changed considerably during the years, but the basic concept remained the same. The game is complex, stimulates the development of several competences, as the motto of the game indicates: "Strategy. Knowledge. Fun." The goal is to conquer Hungary or defeat the opponent by answering as many questions correctly as possible, and thus collecting points. It works completely in line with the key concepts of gamification, as we can get immediate feedback about our success just like about our defeat, and it also has motivating factors both for the game and for personal performance. If a question appears repeatedly, it not only improves memory, but also boosts the desire for information. [2]

3.7 BOOKR Kids

The application presents well-known pieces of classical literature as well as works of Hungarian and foreigner contemporary authors in a way that is easily comprehensible for elementary school students. It can be used very effectively in the use of library lessons to compare the printed book on the shelf with its electronic version. It can be used in many different ways.

3.8 Google Arts & Culture

With Google Arts & Culture, anybody can easily visit the most popular exhibitions in the world's museums from home – or from the classroom –, they can zoom in on certain artworks with great detail, and browse among thousands of stories, photos, videos and manuscripts. Google has worked for a long time to make the exhibitions available online to everybody. With the application, literature, history and art classes can become interesting and exciting. The classes can be made interactive, and the limit of coming up with and creating tasks that are to be solved with the application is only the teacher's imagination.

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3.9 Duolingo

One of the most popular "educational applications" is Duolingo. It works with the tool of motivation that is essential in gamification, for aside language learning, the goal is to collect Lingots, i.e., points, by completing the levels. A great advantage is the improvement of foreign language vocabulary, and the simple, easily operable platform. A disadvantage, however, is that it does not provide explicit practice for grammar, thus making the program rather simplistic; moreover, that the only possible language pairing for Hungarian speakers is English (to learn another language (e.g., German, French, Swedish, etc.) with Duolingo, excellent English skills are necessary). The system could be integrated into public education, even outside the framework of language learning. For example, in history teaching, to connect dates to events, or connect literary works, eras and historical events together. These would help form complex knowledge required by competence-based education.[3]

3.10 Angry Birds

Nobody thinks of *Angry Birds* as an educational game, even though it holds more possibilities than we would think. It would be able to break the monotony of science classes, if teachers illustrated the relevant part of the curriculum with this widely known game. Many would not even believe how much students can learn from the popular game about the interaction between different forces, acceleration and gravity, and their effect on objects.[4]

4 Conclusion

The workings of our society today have changed compared to the society of the past century. Education is no different. The spread of ICT devices and technologies brought their integration into education. The educational and learning needs of Z and Alfa generations have changed. They need illustrative devices and audiovisual technologies a lot more to understand and acquire the material more easily. Installing smart classrooms and using the opportunities in them can be a straightforward method to overcome the digital gap between teachers and students. In my study, I intended to highlight this with a brief, non-comprehensive list of applications that can be used in education. Some of my long-term plans are to compile a more detailed overview, to test the applications listed here in practice, and to assess the experiences of teachers and students first from schools in Budapest, and then from the countryside as well.

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The Information Professional during a curation process at WhatsApp Business

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Abstract. This paper describes how Information Professional manages information during a content curation process through WhatsApp Business (WB) to ensure that information transmitted, individually or in groups, is current, true and verifiable. Such an approach is justified by the great importance that information currently assumes, the increasingly common practice of information exchange through dialogues, online, by peers or groups and the danger that false and / or wrong information may cause to individuals and / or groups. The Information Professional, as a group curator at WB, is in touch with new challenges and opportunities. Among these challenges, it is possible to cite issues related to the information life cycle, especially regarding its verifiability and obsolescence. With respect to opportunities, the Information Professional will be the information facilitator as an important asset capable of enriching the lives of individuals or groups. The purpose of this paper is to address various aspects of this curation process, taking advantage of a real case of curating information about Portugal for individuals interested in the country. In this work it was possible to verify that the curation process can be facilitated with the knowledge and application of several free technologies, available online, which help in the verifiability and timeliness of the transmitted information, as well as the WB tools themselves.

***Keywords*:** Information Professional, Online Content Curation, WhatsApp Business, Online Information Obsolescence, Fake news

1 Introduction

This paper describes how the information professional can manage information during a content curation process from the WB online communication platform to ensure that information transmitted, used or in groups, is current, truthful and verifiable.

Content curation on WhatsApp has been practiced, according to news agencies, since 2016, although WhatsApp was launched in 2009 (information retrieved from version 2.0) [1], [2] and the business version of the platform was launched in January 2018 [3]. This curation through WhatsApp is usually done informally [4], in some cases being involved in illicit practices [5], [6], [7].

It is observed that the practice of exchanging information through online, peer or peer dialogues is increasingly recurrent, and the number of false and/or wrong information transmitted by these means is increasing, which can lead to numerous dangers to both individuals and society.

This scenario is aggravated when the truthfulness and timeliness of information is a key factor for the success or failure of people, families or groups in a foreign country, as is the case of the curator service that this paper will address.

The Information Professional, as a participant in such a process, is in touch with new challenges and opportunities. Among these challenges, it is possible to cite issues related to the information life cycle, such as verifiability and obsolescence. In this case, being a service provided mainly to Brazilians interested in information related to the cost of living in Portugal.

It will be up to the Information Professional to create means to verify the veracity of such information, to know if it represents the present, if it is already obsolete or can be quickly exceeded, as in the case of the values determined by the individual refer to promotions.

Regarding opportunities, the Information Professional will be a facilitator between users and information, being an agent responsible for transforming information into an important asset, capable of enriching the lives of individuals or groups [8]. One example of this is the information provided by the Portuguese emigration service (SEF - Serviços de Estrangeiros e Fronteiras) related to the open of 1900 vacancies, across the country, so that foreigners could deal with matters related to their regularity and legality in the country [9]. However, the vacancies soon became extinct, causing numerous problems for the foreign population [10]. Over time it turned out that these vacancies were being sold on the Internet. Then a police investigation began, where it was found that the lack of vacancies was due to the illegal practice of markings made by computer programs, using data from third parties, in order to market these vacancies to other individuals [11]. After the discovery of this crime, the necessary measures were taken, which also included the expansion of the attendants in the SEF, the vacancies were reopened [12].

The information that new vacancies have been opened for appointments at SEF is invaluable for those who need to make an appointment at the service and Information Professional, who can retrieve and transmit this information, has a great opportunity and can provide an excellent service.

One point that should also be considered regarding the practice of information exchange through groups is that this practice reduces the possibility of informational ignorance. Often the questions that certain individuals pose in the information exchange group are the same questions as other individuals, who sometimes either did not know they had that doubt, or had that doubt, but did not want to be confronted with their answer. This issue is mentioned by Choo [13] which states that the user of the information, consciously or not, sometimes does not want to know what he needs. Within a group, that user will tend to reduce this ignorance related to not knowing or not wanting to know.

Therefore, the purpose of this article will be to address the various aspects of this curation process, taking advantage of the specific case of curating information about Portugal for individuals interested in the country, mainly Brazilians, through WB, its features and other online tools.

2 Online Curation

According to statistics provided by websites such as Domo.com [14], used in a Forbes.com [15] news, and by World Economic Forum [16], in 2017 were generated every day 2,5 quintillion bytes. Already by 2020 the data universe should reach 44 zettabytes. With so much data, it is important to understand how to extract relevant information from this data and to go further, to understand what really matters, to whom it matters, in what format, where and when.

These are questions that an online curator should always keep in mind and which will guide him in the careful selection of information sources and the handling of this information according to the user's goals.

Before online content curation, there was and still exists, digital curation. In the latter, the information goes through numerous filters that mold it into the desired format and embedded with certain values (metadata), in order to be preserved, taking into account its validity, to facilitate its sharing and favoring its transformation into new information products.

According to “The Digital Curation Centre” [17], digital curation facilitates the creation of research data, the maintenance of high-quality data over the long term and favors new research. This is done from a life cycle that encompasses issues such as conceptualization and creation,

which involve capturing, storing, and assigning metadata; access and use, with the possibility of releasing and restricting access to existing data; evaluation and selection; the discard; the preservation; the review, in order to review the dubious documents in a new selection; and finally transformation, which aims to create new information from the existing one [17], [18].

Each of these steps contributes to verifying the accuracy of the information and aims to reduce misunderstanding between users of verification systems and users of information services.

In curating online content, this information already retrieved, which passed through the life cycle discussed earlier, is transmitted online, and this transmission, in the specific case of this study, is made through WB. However, there are other transfer routes as discussed in Zhong, et. al. [19] work where authors study the process of curating online content on social networks "Last.fm" and "Pinterest". This work discloses information about the benefits, both curators and users, of this content curation.

Focusing on curating online content is the user's needs which often translate not only into what they want to know, but also into what the users need to know but do not realize this need. As an example, it is possible to cite a case where a particular user would like information about the means of transport that could take him to a tourist spot on a particular day of the week. The information for this situation was readily identified, but through the sensitivity of the Information Professional, he was able to verify that although transportation was available to that tourist spot, the site was closed for visitation on that particular day due to an employee's strike. The Information Professional was then able to collect some more data and in addition to transportation guidelines, it was possible to provide information such as the best days to visit, time and other recommendations.

As could be seen in the example above, the online content curation service should cover the sharing of specific, verified and reliable information in a given format for private users or groups according to their needs, which include the timing of the transmission, the correct location as well as the form of transmission.

2.1 The Curation in WhatsApp Business

Currently, WhatsApp offers users two versions: The Standard version [20] and the business version [21]. WB has the same functions as the Standard WhatsApp and introduces new functions. Table 1 shows as increments of the business version compared to the standard.

Table 1. Table 1. Comparison of WhatsApp and WB.

Features	WhatsApp	WB
Message sending	Yes	Yes
Group message exchange	Yes	Yes
Voice calls	Yes	Yes
Video calls	Yes	Yes
Share photos, videos, and documents	Yes	Yes
Automated Welcome/Away Message	No	Yes
Company Profile	No	Yes
Contact Tags / Labels	No	Yes
Quick Reply	No	Yes
Products and services showcase	No	Yes

As you can see, WB has features that go beyond those available in the standard version. These features help in managing information and, consequently, in selecting content. But, as mentioned earlier, even before WB, WhatsApp (standard) was already used in the information

curation process [4], even though reduced features were used. In this paper, the use of the WB version of the information curation process will be discussed.

In both applications (Standard and Business), the focus is the exchange of information in various formats, between peers or groups [20], [21]. These information formats include text, links, audios, photos and documents [22].

The WhatsApp groups are made up of administrators and members, and the administrators can choose whether only they can share information in the group or whether everyone can do so and when they can do it.

To be part of a WB group, a user can be directly added by the group administrators, or through a link provided by the administrators in online environments, such as websites or social networks [23]. Groups usually have a main subject and these can range from "family related" groups where relatives exchange diverse personal information; "school related" groups used to share information about classes or to promote some kind of social networking; or even "illegal activities" related groups, warning about police operations in communities or roads, and even poachers [5], [6], [7].

At least since 2016, it has been reported that in some groups of WhatsApp, administrators are charging small amount of money, for users to have access to the information they provide [4]. One example found in the literature is the group created by a model that charges the equivalent of 2€/month for access to her unique intimate photos and poetry [24]. Another example reported is that of a WhatsApp group's administrator who earns about 2000€/month, managing several groups on various topics [4].

Considering the growing need of Brazilian citizens for information about living in Portugal, it was considered the possibility of creating an online content curation service to provide new information and also to confront false or incomplete information made available online in all platforms. The WhatsApp was chosen as the tool to provide this Service, and after the release of the business version the Service became available to the users. It is important to note the other tools were also incorporated into the service to ensure the quality of the information provided.

3 The "Vida em Portugal - Profis" Service

The "Vida em Portugal – Profis"[5] Service is an online content curation service, which sells personalized information to Brazilian citizens who are interested in visiting, living, working, studying or investing in Portugal [25]. This online service is provided through the WB application and is advertised by the owners on social networks. One important way to reach out to potential buyers of the service. It is through "word of mouth" by former users.

In advertisements made by Service owners, there is a mobile phone number associated with the WB account and interested clients are encouraged to send a message to get more information about the Service.

When a message is received in the WhatsApp account, a reply message is sent automatically (a WB feature) to the potential client [26], [27]. The automatic responses in WB are pre-programmed messages that can be one of two types: an absence message [26], which allows a pre-programmed message to be sent at a specific time (e.g., outside office hours); or a Greeting message [27] which consists of a pre-programmed message acknowledging receipt of the message from the person interested in the Service. In this feature, there is the possibility of setting when each message is sent and which are the contacts that will receive them.

[5] "Living in Portugal - Profis"

Depending on the needs of the person that made the contact and after hiring the Service, that contact of this user/client receives a label related to his profile and his fields of interest in Portugal (visiting, living, working, studying or investing). WB labels are a feature that can be used by the Information Professional to create client/user clusters, which enables the easy recovery of these contacts by fields of interest, the creation of message distribution lists, and other possibilities involving the creation of user profiles [28].

A point considered in the curatorship Service is to prepare the users to continue the search autonomously. The "Vida em Portugal – Profis" Service part of what the user already knows, adds to his knowledge new information that will guide the user to where he needs to go and also provides tools that enable users to be autonomous in the search for new related information.

As an example of such empowerment of the user, it is possible to cite the case of a user who wants information on the type of visa that he could request from the SEF. The Information Professional, as content curator, rather than simply passing this information on to the user, provides it with the source where this information was retrieved, how the user can receive frequent updates on this content, and how he can search for issues related to this area.

The administrators of the Service groups also learn, as they select research sources, how to investigate the subject matter required by the user and share it with interested users.

During the execution of the service, it is observed that many users have the same interest, for example about the education in Portugal, and it is not uncommon for questions to be repeated: "which are the public universities in Porto?" "which courses are available at the Polytechnic Institute of Porto?", "what are the monthly fees?" In order to reduce the time spent with the repetition of the writing of these answers, aiming at their uniformity, preventing the transmission of incomplete or different information for the same issues, we sought to understand, through the management of this information, the collection and analysis of these questions, which were the most repeated questions and which were their synonymous questions. A database of responses was then created to feed another WB functionality, the response models [29].

The response models allow the insertion in the WB system of a set of responses which can be embedded by metadata, in order to facilitate their subsequent location, and can still be retrieved by means of a certain command: one bar "/" followed by the "key term" chosen for its recovery.

It is up to the Information Professional to retrieve and manage the information, which includes the questions and answers, check the veracity and timeliness of this information, embedding it in metadata, create ontologies and taxonomies, and prepare the set of responses in order to meet the information needs of users and/or administrators of the groups of the Service.

Amid so much information, the need to create rules and a workflow covering all the activities to be performed was realized. Thus, from the advertising of the service, through the way users were served, to the disconnection of a user from it, everything was documented, and each step was embedded with metadata that facilitated its recovery.

These steps started to help in the way the information retrieved by the Information Professional would be treated, in order to diagnose its truthfulness and timeliness. However, in order to facilitate the management of this information, it was necessary, in addition to the application of the WB and its functionalities, to use other tools, which will now be mentioned and described.

4 Other tools used in the Service

To provide a complete information service, other tools were incorporated to it as its need was felt, always with the collaboration of Information Professional. These tools created an information ecosystem that facilitated online digital curation work through the WB.

The first need observed during the service delivery was to always keep available and quickly manage a set of informational sources, which proved to be frequently requested. These sources provided information such as current exchange rates and values, the availability of accommodation and its values in hotels and private individuals, transportation providers, tourist attractions, among other information.

For this purpose, two tools were used that proved to be useful both for storing this information and for verifying its actuality. The storage tool corresponds to a database of its own, where all information about the Service and its usefulness, were compiled for further research. But just having a database has not proved enough to meet the information needs of users, nor to make the information pleasant [18] and verify the veracity of this information, so new tools were used in the process.

All the information entered in this database was embedded with metadata and for the maintenance of the timeliness of this information, links were also inserted in specific fields of the database. The metadata assist in the recovery of information and the links correspond to a hyperlink to the information sources, which helped in the almost instantaneous verification of the information inserted in the database. If the updated information was different, it was checked again and if it was considered true, then it was used to update the database information.

The need for verification of information is frequent in this type of service, as there is a lot of information about “living in Portugal” available on the Internet, whether on websites, blogs, podcasts and YouTube channels. There are several free groups in WhatsApp on the topic, many of these with little active administrators, where there is almost no moderation of the content available, favoring the proliferation of incomplete and/or even false information.

Several users of the Service “Vida em Portugal – Profis” bring this retrieved information to content curation service groups on the Web and it is up to the administrators to verify this information and transmit the reality about it, including, informing about the source where the final information was verified and recovered. Another important detail was the maintenance of a register of users receiving this information, and all updates were automatically transmitted to them.

Another tool incorporated in the Service were the markers of browsers such as Google Chrome [30]. These bookmarks, such as databases, make it possible to store websites for future searches. Through the functionality of creating folders and subfolders in browsers, it is possible to create a taxonomy of subjects, in order to facilitate the search and retrieval of information, favoring their verification.

During the course of the service, it has been realized the need to create mechanisms to facilitate the sharing of information, at the same time as creating levels of permission in this shared information, that is, in cases where users had access to a given document with different information, but each group of users should have access to only part of this information. This access and restriction are points addressed about the digital curatorship by the “The Digital Curation Centre” and relates to the life cycle of information [17], [31].

This was a concern of the Information Professional and to achieve these goals, the service began to use some of the features of Microsoft Office, among these features are the sharing option [32] and the incorporation [33]. The first is the ability to send certain information to others by applying certain filters, such as the possibility of allowing the receiver of this information to just view or edit it. Meanwhile the incorporation, widely used in the Service in

Excel documents, allows only certain cells or pages of the book to be available, with the same possibilities in sharing.

With frequent updates of information on the Internet, from offers of activities for tourists, job opportunities on specialized sites and even changes in SEF procedures, another concern of the Information Professional was to keep a list of websites under surveillance and thus be warned about updates on these sites. To this end, the Service has incorporated online monitoring tools into its daily routine. These tools, while they collaborate with the update of the information, they also allow us to perceive if certain information that circulates on the Internet is true, if it is complete and if it is current. The next topic will address these monitoring tools used in the Service.

4.1 Online monitoring tools

Online monitoring tools are useful so that the Information Professional can keep up to date on data and information related to the field of interest in certain sources of interest, in addition to allowing a screening of the recovered content, reducing the occurrence of false information.

Services such as those offered by Visualping.io [34] and by Wachete.com [35] allow us to monitor specific parts of sites and blogs, producing an alert in case these monitored parts suffer any change.

An example of the application of this functionality for the Service “Vida em Portugal – Profis” is related to the monitoring of the news area of sites of certain tourist points. It is usually in this part of the site that changes in the operation of the site are reported, such as the strike commented on earlier in this work. As soon as news is published, the Information Professional will receive a notification and may create value in the service provided to users.

Two monitoring tools are massively used by the Service “Vida em Portugal - Profis,” for the curatorship of information in WB, these are the functionalities of the Feedly [36] and the Google Alert Service [37].

Among the functionalities provided by the Feedly, are the monitoring of news and information updates in periodicals, blogs, Youtube channels, Twitter and Really Simple Syndication (RSS), which enables the receipt of notifications if the monitored information changes; the organization of the monitored content, facilitating the creation of personalized content, such as the possibility of inserting transport information in the same place; the execution of searches on this content; sharing and receiving information on similar and related topics, in addition to the collaborative work that makes it easier for group administrators to access and enrich this information.

On the other hand, Google's alert service allows you to choose terms or sentences to be monitored, choosing the frequency in which this monitoring will be done (whenever a new occurrence is detected, once a day or every week); where on the web that the content will be monitored (in blogs, journals, videos, books, etc.); in what language it will be in; in which region; whether all results or only those considered exceptional by Google will be shown; and whether the results will be delivered by email or RSS.

After the choice of terms or sentence, for example “visa+ Brazilians + SEF,” Google starts searching in the chosen places, indexed (periodic) newspapers for example, and all occurrences, according to the user's choice, are communicated at scheduled times and to the chosen channel.

These services feed the database used for the digital curatorship in the WB and assist in the maintenance of reliable and up-to-date information for the users of the Service.

5 Conclusion

This work aimed to demonstrate how Information Professional actively participates in an online digital curatorship service through the WB. The work showed the several features of the WB application allows the management of information, whether this information is the contacts of users, the response models, or even the information retrieved from different information sources. It was observed that information management work developed by an Information Professional is necessary in order to extract value from the features of the WB and of the channels that make data and information available, enabling their verification, with the purpose of confirming the reliability and timeliness of these data and information. It was also observed the need to use other tools in order to create an information ecosystem, the need to create a workflow, at the same time as it was necessary to monitor the Internet for the recovery of new information, which is transformed into knowledge for users of the Service "Vida em Portugal - Profis".

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The Information Professional's Role in the Fake News Phenomenon

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Abstract. The goal of this paper is to analyze the main characteristics of the Fake News phenomenon in the Information Science field. With the digital era and the use of new technologies, new information consumption habits have appeared, which favor the dissemination of distorted or false information on digital platforms.
Information professionals traditionally had control of the resources to satisfy the informational needs of their users. Reference sources were reliable and there was a certain guarantee and control of the information. In the digital era, informational professionals have lost the information monopoly and have been forced to share knowledge with Internet sites and social network sites that offer a broad array of information. The dissemination of this knowledge has led to the emergence of a new concept: Fake News.
Information professionals cannot ignore fake News and two essential tasks can be used to ensure truth. First, the use of resources that allow the information professional to filter and curate information to provide an adequate informational resource for users. Secondly, to provide strategies to fight fake news. Accordingly, we propose a guide that provides tools and resources to help users to check information obtained through new technologies. Additionally, these resources, tools and recommendations could enable information professionals to digitally curate information that could later be offered to end users.
We have reviewed papers and recommendations from a wide variety of institutions as well as international media to create an implementation guide for the information that is our workspace.

***Keywords*:** fake news, librarians, information professionals, information literacy, information evaluation.

1 Introduction

Information professionals have traditionally had reliable information sources at their disposal. These information sources allowed librarians, documentalists, archivists and other information professionals to meet the information needs of different users.

The emergence of the digital era with the Internet and other new technologies has changed the habits of our society and how information is transmitted and received. Information is broadcast from traditional media such as radio and print, as well as through digital age tools.

Information sources on the Internet include Social Networking Sites (hereafter SNS) which permit a user to generate content, share information and have a space for communicating with others. Established sites such as Facebook and Twitter seem to have started the growth of so-called Fake News. This has been a big problem because users sometimes cannot distinguish whether the information they receive, watch or read is true or false.

Information and documentation professionals cannot ignore this phenomenon and are inevitably involved in it. Our involvement is generally in two ways: filtering information and curating content for users and providing different strategies to spot fake news.

In this paper, we review a number of publications from institutions and international media regarding how to spot fake news in order to create an implementation guide in the field of information and documentation.

2 Fake News: Information or Misinformation

The term “Fake News” has been growing more prominent in recent times. False information has existed as long as there have been media to disseminate it. However, before the advent of the Internet, false news was hidden or deleted before it could reach many people. The problem has emerged with new digital media that make it easy to create and disseminate stories relating to many different topics. According to experts, this wide variety of content makes it very difficult to determine if the content is informing or misinforming the reader. The democracy of content creation presented by SNS allows a rapid dissemination of information when compared to traditional media such as radio, television and print media, which has resulted in the spreading of fake news. One of the consequences of fake news is that users of SNS are subject to clickbait techniques that are monetized with online advertising (Alvarez, 2017). In addition, there is evidence of an industry of websites publishing misleading political articles targeting the United States (Oxenham, 2019).

Alonso-Arevalo and Castilla (2019) researched the information overload phenomenon and the connection to new digital technologies which give rise to disinformation. SNS provides enormous quantities of information on such diverse topics that cause people to be overinformed, and at the same time uninformed, because they cannot process such diverse news on a topic. In addition, the authors suggest that if they added a malicious intent, the Fake News appears to spread virally in most cases.

The spread of fake news may cause a lack of reliable information. For instance, Digital News Report 2019 (Newman, Fletcher, Kalogeropoulos, & Nielsen, 2019) explains that only 43% of Spanish Internet users say they usually rely on the Internet as a news source, despite the Internet’s growth as a source of information. This report also shows the growing use of SNS, although only a quarter of the respondents think that these networks’ information is reliable.

Another report published in 2018 by the Spanish section of Reporters without Borders (Campoamor, Macu de la Cruz, Fuertes, Fibla & Alonso, 2018) showed a growing concern for the phenomenon of fake news, which threatens press freedom and leads to massive harassment of online journalists. The report suggests that there are hidden individuals working behind the scenes as online mercenaries for specific interests or for government. This report also mentions the impact that this may have on journalists who are attempting to be objective. Consequently, their work may be obscured by the overload of information coming from questionable sources.

One of the best-known examples in the field of Fake News relates to the U.S. presidential campaign in 2016 that led the world's largest power to elect Donald Trump. In this electoral campaign, online sources were allegedly used by Russians for the creation of false news with multiple profiles and bots. The goal of the creation of false news was to change voting trends and influence the campaign which Trump finally won. This campaign was studied by the U.S. Congress and Senate, particularly in relation to the online publication of 3,000 advertisements on SNS with false news, estimated to have reached about 126 million Americans, representing about half the eligible U.S. voters. (Levin, 2017; Washington, 2017). Similarly, a study analyzed 14 million Twitter messages during the U.S. 2016 campaign, concluding that bots spread massive amounts of misinformation, making it shareable by humans (Shao et al., 2018).

For his part, Trump uses the term Fake News in response to the criticism he receives in his management and to discredit the media who talk about his policies and facts that do not favor him (McCarthy, 2017; Wong, 2019).

There are several types of fake news and a classification of the different typologies have been proposed (Lopez-Borrull, Vives-Gràcia, & Badell, 2018). However, other types of Fake News are produced with an advanced use of technology, the Deep Fakes. This content uses advanced video techniques combined with artificial intelligence (hereafter AI). As an example, BBC published a story that there was a social video where Boris Johnson and Jeremy Corbin each

endorsed the other for Prime Minister (BBC, 2019). Similarly, in relation to the past Spanish elections in 2019, some deep fakes with candidates went viral (Llanos, 2019).

As can be observed on the aforementioned examples, it seems that fake News surrounds us. The current phenomena such as the political situation in Catalonia, Brexit and many other daily topics, generate considerable information through social networking sites and likely distort the information. Consequently, as information professionals, we need to spot this phenomenon to have objective and real information available.

3 Projects and initiatives to deal with information and documentation

In the field of information and documentation, professional associations in the field are aware of the problem and lead different projects and initiatives.

The International Federation of Library Association (hereafter IFLA) created a 2007 infographic called *How to Spot Fake News* which is a good practice guide (Figure 1). It is translated into 37 languages and, according to IFLA, it is a tool based on the belief that with education it is easy for users to acquire confidence and governments do not need to impose censorship (IFLA, 2019). In addition, IFLA has carried out campaigns to participate in debates on the subject and about information, such as that carried out in Brussels in February 2018, where, in conjunction with the European Union, Internet disinformation was debated, concluding that there is a need for training policies in digital skills (IFLA, 2018).

Fig. 10. IFLA infographic to detect *Fake News.*
Source: https://www.ifla.org/publications/node/11174

CILIP (*the Library and Information Association*) also places much importance to information literacy, to the extent that in 2018 it modified the definition it made in 2004, in order to adapt it to the phenomenon of fake News*:*

"Information literacy is the ability to think critically and make balanced judgments about any information we find and use. It empowers us as citizens to reach and express informed views and to engage fully with society" (CILIP, 2018)

The *American Libraries Association* (ALA), through the *Programming Libraries* initiative (ALA, 2019), collects resources for guiding and advising national libraries in order to offer users education to distinguish fake news*.* Among the resources on offer, there are webinars where participants may discuss fake news*. Libguides* are library guides discussing different aspects of the topic, such as the evaluation of information, detection of false news, and the comprehension and identification of fake News. It also provides a series of links to news published in digital media on the matter and to studies about it.

In many university libraries in the United States, it is quite common to find guides offering tools and information to guide and help users in detecting fake news, such as "*Fake News, Misinformation, and Propaganda"* (Harvard Library, 2019) or "*Real News/Fake News: About Fake News*" (Berkeley Library, 2019). We easily found more than one hundred university-published guides on this topic. In some cases, it is implied that professors were involved in the library guides, in other cases only librarians developed these guides as no professors are mentioned.

In a review of Spanish libraries, we have not found literature or guides about initiatives to spot fake news. There are blogs written by some professional librarians about the initiatives mainly taken in the United States. In the case of Spanish universities, only a few universities have published guides.

4 How do we cope? How to spot misinformation?

The process to detect and verify fake News is fact-checking. However, this is not currently possible in all languages and is still not currently possible for all social media platforms. There are some experimental tools under development which are mainly focused on one platform. In Germany Fraunhofer-Gesellschaft developed software that focused on Twitter to analyze and filter out Fake News and disinformation (Fraunhofer-Gesellschaft, 2019). A fact-checking tool was developed as part of a study to detect fake news in Greek (Katsaounidou, Vryzas, Kotsakis, & Dimoulas, 2019). A system called *FakeNewsTracker* was proposed for the Twitter platform, based on the analysis of linguistic and social engagements features in published information (Shu, Mahudeswaran, & Liu, 2019). Finally, another study proposed a system to predict and report bias in news media sources (Baly, Karadzhov, Alexandrov, Glass, & Nakov, 2018).

Users also have tools to spot misinformation, to detect fake news or to discover that news is biased. However, these tools are not very well known and, in most cases, are not promoted enough. For instance, there are browser extensions like Official Media Bias Fact Check Icon (available in Chrome or Firefox browser) that detect how biased a political news story is, built by Media Bias Fast Check (https://mediabiasfactcheck.com/). Another tool is *FakerFact,* available for Firefox and Chrome browsers (https://www.fakerfact.org/). In the case of Spanish, 19 fact-checking tools were compared and analyzed to determine, whether the reporting was textual, visual or chromatic, with the conclusion that not all analyzed tools were recurrently active (Herrero & García, 2019).

Another option to spot fake news is the use of Blockchain technology. This technology employs information blocks where each block contains basic information (sender, receiver, date, amount, etc.), the block hash (an ID number that is unique and unrepeatable) and the hash of the previous block so that each block is connected to the previous one and the next one. The Blockchain operation is based on the hash with numbering that is generated at the time of its creation, so that if you modify the information from the blog, it automatically varies the hash and invalidates the string because it will cease to fit the previous and subsequent blocks. The security and certification of documents using this technology is decentralized since it is provided by users, so when you want to add a piece of information or a block to the chain, it is the users themselves who validate it,

checking the authenticity. An example of the use of this technology is the CIVIL (https://civil.io) platform, which uses blockchain technology to provide the user with trustworthy news while also protecting journalists being censored (Pavía Martínez, 2019).

With these issues in mind, along with tools under development, the possibility to use browser extensions and the use of blockchain technology, we propose three ways to combat misinformation: information literacy, content curation, and the use of tools to evaluate information.

1 Information literacy taught by information professionals would permit users to classify the media information, evaluate it and choose truthful and objective information. In this section we could include different activities such as practical workshops and seminars on detecting Fake News, subscriptions to quality media or online training. Similar activities were proposed by other authors (Caridad-Sebastián et al., 2018; Lopez-Borrull, A., Vives-Gràcia, J., & Badell, J., 2018)

2 Content curation is a technique to manage the enormous quantity of information helping users with information overload. Using the 4S strategies (search, select, sense making and share) (Guallar & Leiva, 2013), information professionals may select sources of reliable information according to the information needs of users, choosing and distributing curated information. An example is blogs in libraries with thematic categories to disseminate quality content selected by information professionals.

3 The creation and use of information evaluation tools. Evaluation tools could include blockchain technology to allow information distribution platforms to provide readers with validated and reliable information regarding content and its source (Huckle & White, 2017). However, developing platforms with this technology is costly and requires funding to make them sustainable.

5 Conclusion

Information professionals have faced different obstacles throughout history that have made it difficult to offer users information that is better suited to current needs. The use of social networking sites means that we currently receive massive amounts of information and we are exposed to fake news.

Spotting fake news must mobilize a range of professional strategies for staff working in the field of information and documentation. As professionals, we are experts because of the academic training allowing us to combat this new challenge. It is necessary to insist that users be trained in information literacy, while also offering them curated content. In addition, it would be beneficial to promote and provide users with tools such as fact-checkers along with back end technologies such as blockchain to obtain and validate information in a secure way.

However, the problem of fake news is at the junction of information dissemination and economic or political interests, so as information professionals we are in a complex and difficult struggle. We think it would be beneficial to develop common strategies among information professionals along with documentation that would help to spot fake News on the most common SNS such as Facebook or Twitter.

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International Collaboration Experience about Open Access in Bulgaria

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Abstract. The purpose of this paper is to describe the results from the international collaboration about Open Access between researchers from the USA and Bulgaria. In the frame of Fulbright scholarship of the lecturer from Oregon State University (OSU - USA) at the University of Library Studies and Information Technologies (ULSIT - Sofia, Bulgaria) it was proposed as a main research task a survey about Bulgarian Author Preferences for Open Access. In March 2019, the authors distributed a survey to faculty in all academic ranks at ULSIT. The general aggregation consists of 64 effectively surveyed lecturers and doctoral students, from the respondents list of 102 researchers, which makes the survey representative for ULSIT. In the paper we interpreted the purposely selected findings about knowledge, opinions, and experiences of ULSIT researchers regarding open access publishing, open-access science policies and related issues. The research, which found gaps in awareness and understanding of open access policies and practices, revealed the need for more research and training in all aspects of OA. Researchers provides a set of recommendations for further developments in ULSIT and evaluate results from a variety of trainings, collaborations and communications about OA theme in the fall term of AY 2018/2019.

***Keywords*:** Open access, International collaboration, Institutional repository, ULSIT, Bulgaria, USA.

1 Introduction

At a meeting of the European Union Competitive Council (E.U.) on May 27, 2016, the member states agreed to the ambitious goal of making all scientific research papers published by faculty at public universities of the member states freely available by 2020 [4]. The purpose of this paper is to describe the results of a survey of the University of Library Studies and Information Technologies (ULSIT) faculty regarding their awareness, practices and attitudes towards the goal and their preferences for achieving it. The research is the result of an international collaboration between a Fulbright Scholar from Oregon State University (Corvallis, Oregon, USA) and faculty at the University of Library Studies and Information Technologies (Sofia, Bulgaria).

2 Methodology

In March 2019, the authors distributed a survey to faculty in all academic ranks at ULSIT. The questionnaire included a total of 21 questions in three sections: Demographic Information, Research Practices and Open Access Benefits, and Awareness of and Attitudes Concerning the European Union Goal of Open Access. The general aggregation consists of 64 effectively surveyed lecturers and doctoral students, from a list of 102 potential respondents, which makes the survey representative for ULSIT. In the paper, the authors interpret selected findings about the knowledge, opinions, and experiences of ULSIT researchers regarding open access publishing, open-access science policies, and related issues.

3 Findings

3.1 Demographics

The first section of the survey asked a series of demographic questions. Out of the 64 respondents who disclosed gender, 45 (70%) are female, 18 male (28%). Participants are in the following age ranges - less than 30 years of age (n=2; 0.1%), 30-39 (n=16; 25%), 40-49 (n=25; 39%), 50-59 (n=14; 11%), 60 and over (n=7; 10%). Respondents were closely split in terms of the length of time that they have been employed in research. The largest group of respondents have been employed in research between 10 and 14 years (n=7; 26%), followed by the groups of: 20 years or more (n=16; 25%), between 6 and 9 years (n=12; 19%), between 15 and 19 years (n=10; 16%), and 5 years or fewer (n=9; 14%). The highest educational degree achieved by 45 of the 64 (70%) of the respondents is a PhD degree, 10 (16%) have a Doctor of Science (DSc) degree, and 9 (14%) have a Masters degree. Respondents were asked to select the research areas or disciplines in which they are employed and were permitted to select more than one. Survey respondents work in the following research areas: Social Sciences (incl. Library and Information Sciences) (14); Education and Pedagogy (10); Philology (6); History, Archaeology and Philosophy (6); Chemical Sciences (6); Mathematics, Informatics and Computer Science (5); Engineering Sciences and Technologies (5); Arts and Design (2) and others.

3.2 Open Access Awareness and Preferences

The authors included a question to ascertain the degree to which authors are aware of arguments in favor of open access. Seventy-seven percent of survey respondents indicate that they are either extremely aware (19%) or very aware (58%) of arguments in favor of open access and 98% indicate that they are at least slightly aware of such arguments. Table 1 offers insight as to whether researchers believe open access benefits their research field or those who are not associated with an institution that is able to provide access to the literature. Eighty percent believe their research field benefits from open access to research, 9% of respondents do not, and the remainder, 11% are not sure. No respondents said that they do not care about this at all. Fifty-eight percent of respondents indicate that members of the public who do not otherwise have access to research benefit by open access to the research in their field. Thirty-four percent indicate that they are not sure whether the public benefits from open access to the research in their field. Five percent responded that they do not think the public - including students, faculty and researchers not employed by institutions that are able to provide access to scientific research benefit by open access to the research in their field, and 3% said that they are not interested. There were no significant differences based on how long the respondent has been employed as a researcher.

Table 1. Open Access benefits

	Benefits the discipline (%)	Benefits the public (%)
Yes	80	58
No	9	5
I am not sure	11	34
I am not interested	0	3

While respondents are aware of open access generally, respondents demonstrate not satisfactory level of awareness of the European Union goal for open access to publicly funded research by the year 2020. Only half of respondents (52%) said that they know about the EU goal, 43% are not informed at all or are not sure if they have heard of the goal (31% and 12%

respectively), and 5% are not interested. There are no significant differences in terms of researcher's length of tenure.

In spite of the relative lack of awareness of the EU goal, Table 2 shows that once the goal is explained, respondents support it. Seventy-five percent of respondents answered that they either "support" or "fully support" the EU goal. Twenty-five percent are undecided. No respondents said that they "do not support" or "actively do not support" the goal. Respondents who were not previously aware of the goal are also generally supportive but do not "fully support" the goal as much as those who have previously heard of it.

Table 2. Awareness and Support of the EU open access goal

Awareness of the EU open access goal	(%)	Support for EU open access goals	(%)
Yes	52	Fully support	39
No	31	Support	36
I am not sure	12	Undecided	25
I am not interested	5	Do not support	0
		Actively do not support	0

3.3 Open Access Repositories

In the period when the survey was conducted, ULSIT did not have an institutional repository, and were not operating with an article deposit mandate or policy. Having in mind that situation, it is an interesting finding that 14% (n=9) of respondents give an affirmative answer, 56% (n=36) answered with "Not" and 30% (n=19) are not sure, when they were asked "Are you required by your university to deposit your research articles to an institutional repository?". Twenty-five percent of ULSIT respondents said that they deposit articles to their institutional repository often or almost always (n=10, 16% and n=6, 9% respectively) and 14% (n=9) of ULSIT respondents deposit articles to the repository at least sometimes. Sixty-one percent rarely or never deposit to an institutional repository (n=18, 28% and n=21, 33% respectively). Table 3 shows a difference in respondents' answers when they were asked how often they deposit articles to a disciplinary repository. ULSIT researchers are more active in deposit of scientific articles in disciplinary repository. This is as expected due to the absence of an institutional repository. But another possible explanation of that finding is that it is common for researchers in ULSIT to deposit full-text versions of articles in Research Gate and other similar research platforms, which they may consider the equivalent of a disciplinary repository.

Table 3. How often researchers deposit articles to institutional repository and to a disciplinary repository

Deposit articles in institutional repository	(%)	Deposit articles to a disciplinary repository	(%)
Almost always	9%	Almost always	19%
Often	16%	Often	9%
Sometimes	14%	Sometimes	20%
Seldom	28%	Seldom	33%
Never	33%	Never	19%

The findings indicate a lack of understanding of what constitutes an institutional repository and disciplinary repository. The respondents may consider the practice of making an article available on a personal or departmental website, sometimes referred to as “gray” open access, as equivalent to green [3]. It does seem clear that in order for the number of articles to be open access in repositories to increase, it will be necessary for ULSIT to implement and promote the use of an institutional repository, to establish services relating to scholarly communication and repository development, and to encourage articles deposit to open access repositories. In December 2018, the university become a partner in a consortium for the implementation of the National Scientific Program „Information and Communication Technologies for a Single Digital Market in Science, Education and Security (ICTinSES, 2018-2020)“, financed by the Ministry of Education and Science. One of the main tasks of that project is to establish an institutional repository and a green OA policy, which could be realized by the end of 2020. A team from ULSIT has begun to work on it.

Fifty-nine percent of (n=37 of 63) respondents say that having a publisher deposit the version of record--a final published version of the article--on their behalf to an open access repository would be important or very important in a scenario where the author is required by a mandate or policy to make their articles available open access in such a repository. Fifty-seven percent (n=36 of 63) find that a publisher depositing a post peer review version of articles would be important or very important in such a scenario. These results suggest that authors do not care which version of an article is made available open access.

3.4 Open Access Trainings and Communications in ULSIT

The international collaboration between the researcher from the United States and researchers at ULSIT in the AY 2018/2019 was very useful and productive. In addition to the survey and other research activities, Assoc. Prof. M. Boock taught a course on Digital Libraries for undergraduate students. He also participated in meetings and presentations to discuss his experience at Oregon State University Libraries and Press (OSULP) and The Center for Digital Scholarship and Services (CDSS) in establishment and development of the ScholarsArchive@OSU and Scholarly Communication Services, dedicated to Data Management, Open Access Publishing, Copyright and Fair Use, Open Access Promotion and Implementation [1, 2]. The collaboration brings new knowledge and experience value to the content of the academic disciplines “Information Services for Science and Education” for Bachelor Program and “Open Access to Science Information” for Master Program at Library Management and Archival Studies Department at ULSIT. Researchers were involved in joint presentations at scientific conferences and in preparation of publications [5].

4 Conclusion

As a result of the academic collaboration and survey implementation, the following recommendations for further developments in ULSIT, applicable in other Bulgarian universities also, could be pointed out:

- The authors recommend initiating a discussion to increase the research community’s awareness of the benefits of Open Science, Open Data, and Open Access.
- The findings demonstrate the need for the establishment of continuing education programs in the area of Open Access and Research Data Management competency at Bulgarian universities. The goal of these trainings is to help researchers and project managers in ULSIT and throughout the country to obtain knowledge about OA policies, strategies and best practices; learn how to publish articles in OA journals; and learn about options for depositing

articles and scientific data in OA repositories. Also, these activities are intended to inform librarians and project managers about services relating to scholarly communication and repository development.

- The creation of an electronic institutional repository at ULSIT is needed for the long-term storage and dissemination of electronic documents and scientific results, as well as for the development of a range of services to support research and self-archiving as a first step on the Green Road to open access. In this regard, the following should be developed and validated: a metadata standard for the provision of research data in an institutional repository; standard file naming system; standard of requirements for storing research data at the university repository, etc. with further training and advice for their implementation into the researcher's practice.
- There is need for the establishment of services relating to scholarly communication and repository development. A set of library information and technology support services related to research process should be provided.

Participation of ULSIT as a partner in the National Scientific Program „Information and Communication Technologies for a Single Digital Market in Science, Education and Security (ICTinSES, 2018-2020)", financed by the Ministry of Education and Science is an unique opportunity to achieve these goals in the near future.

5 Future developments

In April-May 2019 the survey "Bulgarian Author Preferences for Open Access" was conducted at five other universities, namely Konstantin Preslavsky University of Shumen, The National Academy for Theater and Film Arts "Krastyo Sarafov", New Bulgarian University, University of Chemical Technology and Metallurgy and The University of Veliko Tarnovo "St. St. Ciryl and Methodius". These new sets of data will give authors a chance to make comparisons and to stimulate inter-institutional dialogue and collaboration for needed improvements.

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Japan's Sontaku Culture and its Democracy Based on Fake News – a critical examination of Japanese political and Internet society

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Abstract. Sontaku was selected as 2017's buzzword-of-the-year in Japan. It was inspired by a corruption scandal around the construction of a private school. This traditional word, almost forgotten in the modern lexicon, was "reincarnated" in Japan's 21st century society. Sontaku refers to "doing or saying something to please an important person," this expression as well as kuh-ki wo yomu (reading between the lines), has come to characterize the atmosphere of public discussion in Japan. We explore these concepts in relation to Internet culture and examine sontaku-like cultural behavior which governs how Japanese youth consume and interact in online groups. To do this we examine identity and performance theory and explore an NHK media consumption questionnaire (Hodaka, 2018). We also conducted a questionnaire (n =97) with university students aged 18-24 on Internet media and their consumption behavior. We found that participants consumption was focused within their own specific interest groups with little consideration to accuracy.

Keywords: identity, ideology, Internet, Japan, sontaku

1 Introduction

In 2017, the Japanese expression *sontaku* was selected as one of the buzzwords of the year selected by the 2017 U-Can *Shingo Ryokogo Taisho*. The inspiration for this selection was related to a corruption scandal around the construction of a private school which mired Japanese Prime Minister Abe (Osumi, 2017). The political controversy surrounded Prime Minister Abe and Finance Minister Taro Aso for altered documents related to the sale of discounted state-owned land to a school operated by Abe's wife in a clear conflict of interest where it seemed that they were using their political value to further their private success (Sieg, 2018). Despite the scandal, the Prime Minister and his wife suffered no effects, rather the network of political officials modifying the documents and the sale were punished. In effect, the political operatives moved or were claimed to have moved without explicit orders from the Abe, and instead were following *sontaku* culture. Translated loosely *sontaku* is doing or saying something to please an important person. Abe's subordinates surmised his wish and acted without explicit directions. This relates to the more contemporary expression *kuh-ki wo yomu* (reading between the lines). These actions, in a Lacanian sense, are unconscious, implicit in nature - meaning that subjects engage in *sontaku* behavior without explicitly knowing it. *Sontaku* characterize the atmosphere of Japan in the case of offline and online public and political discussion. To explore *sontaku* in online consumption behavior we must first understand identity formation, performance, and self.

2 The Offline Self

Mortley (2018, 2019) described the challenges of identity and self-construction discussing Plato and Lacan on the matter of self-knowledge. In his analysis, Plato and Lacan explain the general breakdown of self and foster a genuine desire for self-understanding. This begins the narrative and philosophical concept of "knowledge of self" and how it comes through the eye of the other

or the mirror. Through this desire to see self, Mortley (2019) connected the age of "selfies" to the continuing evolution of desire to see one's reflection. The co-constructive nature of self goes beyond the reflection of a subject's visage and requires some sort of acknowledgement of another subject. During the construction of self, it is important to understand this need of the other. Honneth (1995) said, "Inherent in our everyday use of language is a sense that human integrity owes its existence, at a deep level, to the patterns of approval and recognition…" (p. 131). However, in the realm of the "network" the recognition and construction of identity can take more radical and ahistorical turns, where users are disconnected from traditional social norms.

In Japan, the ability to "read the atmosphere" or to predict the desire of others is imprinted into the fabric of society. *Sontaku*, in political and professional circles has subordinates scrambling to infer and predict the desires of their superiors and customers. One major tendency of Japanese culture and society is characterized by s*ontaku*, in the offline world. *Sontaku* acts as a regulatory system for behavior in that subjects are left with the "pressure" or "requirement" of developing an implicit understanding of the desires of those around them and this behavior regulates their interactions between peers, superiors, and subordinates. These constructs direct subject's presentation in public life.

Explicit *sontaku* takes the form of absolute repression. Absolute repression casts an image that subjects do not have a freedom of choice. In contrast, implicit repression appears as choice. When *sontaku* regulates desires implicitly it is very effective (Greenfield, 2012). In August 2019, Tokyo Medical University admitted to skewing entrance results to favor men. A school official confessed the reason was the university feared having more female doctors, because they believed it could result in labor shortages in hospitals, as women could take maternity leave. After the scandal was revealed, NHK conducted a questionnaire to female doctors about the gender-bias issue and found: 18.4% agreed with the need for gender bias, and 46.6% slightly agreed with the decision (Livedoor News, 2018).

This is one of the strong tendencies of *sontaku*. Despite seeing the injustice of gender bias these female doctors' first consideration was towards the skewed notions of the hospital shifts. First, they "read the atmosphere" and neglected the "accusation of injustice." These doctors believed that gender-biased entrance exam is a type of "lesser evil." They believed non-biased exams would bring a catastrophe to hospital management, because women have greater university pass-rates and the majority of medical students would be women. Here, *sontaku* culture is implicitly activated. Therefore, they prefer to keep more male doctors, though this could result in reduction in quality of care.

Even in the female doctor's view, the gender pass-rate controlled exam preserves the Japanese medical system. This is the explicit power of *sontaku* culture (offline and online). They do not protest the injustice in the society. This *sontaku* behavior helps to continue the fake tradition (gender-biased society). In this *sontaku* based society, the algorithm will collect these kinds of opinion, and *sontaku* culture will provide the passage to forgetting the possibility of systematic societal change for the better.

2.1 Performance and Identity

Casilli (2012) mentioned a strong continuity between the practice of management of body traces on computer networks in the form of "self-presentation" from the perspective of Goffman (1959). Casilli viewed his work on social behaviors through an understanding of the dialectical process of self-presentation. This self-presentation is represented by the comings and goings between a scene or space of self-demonstration, and the backstage which is an inaccessible place to the public. These processes are still effective today, by simply reconsidering notions such as "scene" and "backstage" and connecting then with the modern construct of the

"network" and "offline" life (Casilli, 2012: p. 18). In Japan, self-presentation is constructed by *sontaku* and the requirements of reading between the lines and through this subjects understand political and social climates implicitly. Casilli (2012) emphasized the performative character of self both on the Internet and through a dialectical process, this causes the transformation of community through the performative characters serving to harmonize within their chosen social milieu. In both the offline and online sense this moves users to seek groups or communities composed of like-minded people they enjoy interacting with, and like clubs or social groups, theyective online presence (Casilli, 2012: 20).

2.2 Fake News, Ideology, and the Postmodern

Is a networked existence disconnected or connected to history, does it resemble the approach to offline identity, and is it an ideology in purest form? Althusser (2014) claimed, such an existence is without a history. To face ideology is to question self as a concrete concept, Epstein (2013) contended that the concept of self is false (p. 121), and Žižek (2013) argued that the self, is a disruptive and unnecessary concept and that the core of our being is simply a void (p. 130). This void is a space for activity, a place subjects wish to fill through online and offline interaction. Online, much like offline communities are performative spaces where like-minded communities share information and interests. When we consider the formation of groups and Žižek's (2013) void, the sense of something lacking and our desire to fill it.

As an example, invented tradition and online behavior is often connected directly to right-wing Internet behavior, and these right-wing sites and resources operate within a *sontaku* cultural framework allowing fake news to seamlessly emerge into users' narratives. This is further explained by Žižek (2017) when he explored self without density or consistency (p. 33). His analogy likens the self to reflection, the reversal of the mirror (the subject seeks a mirror in others). In this analogy, the subject is the mirror projecting experience onto their environment or society like a computer monitor (Žižek, 2017: 33). The key component of identity is attempting to anchor into historical narratives. Žižek (2017) wrote that people experience their national identity as lost and that this awareness of loss is the zero point of that identity. The pure subjectivity of that loss of "national identity" is filled with the gradual invented tradition (p. 34).

3 The Online Self

Sontaku culture functions in "invented" tradition and can be used as a system of filtering and managing online behavior, information including fake news, and establishing community hierarchies. Subjects try to fill the self/void through online and offline interaction; however, this process creates risk. The first arises when subject's interests are marginalized in society, and results in isolation or turning solely to their given communities for support. The second is when the subject accepts their public identity but also covertly continues their marginalized behavior in an online community, this leads to the creation of social tensions for the subject with their everyday life as they attempt to live a dual existence. Subjects often prefer communication with limited groups of people, both online and offline, so that their interactions suit their interests. Miyadai (1994) referred to this as *shima-uchu* (Island Universe). *Shima-uchu* are interest-closed groups that accumulate information and communicate on specific topics and interests. In these island-like communities, rules and performative narratives take shape through a *sontaku*-oriented approval system with perceived hierarchical structures (the administrators). Casilli (2012) used Bergström's (2011) concept of performative narrative which demonstrates this behavior, "[t]he questions of network presence is then articulated with the construction of an eminently declarative and performative body identity" (p.20). Online communities and groups

are often in this "rediscovery" paradigm creating their own ahistorical truths and "inventing traditions" in the Hobsbwarm (1983) sense. These practices are predicated on the desire of recognition and the need to be seen, respected, and understood in Honneth's (1995; 2014) system of recognition.

Azuma (2011) adopted the *shima-uchu* concept and applied it to his structure representing the strength and isolated nature of community tendencies (p. 125). In an earlier work, Azuma (2001) provides an example of this tendency where he analyzed *otaku*. *Otaku* are a generalized *shima-uchu* that exists on the Internet. This example is over generalized as the *otaku* community has since fractured into multiple tendencies isolated from one another through genres, resulting in these specialised fan groups becoming isolated from one another. Users within their respective community work through a sense of recognition and develop two sides of self; the self-constructed through the mirror of other and the mirror of the other itself. Today users isolate their opinions into respective "islands" on the Internet, consider Reddit as an example. Reddit is a news, image, and story posting platform where communities organize in something referred to as: "sub-Reddit." There is overlap, but users consume media on subreddits closely aligned with their political, social, or communicative interests only to pull from alternative viewpoints to critique them, however, this does not restrict the potential for greater communicative and performative cross-contamination. These subreddits are community run and the administrators are selected from within a given community. The rules and behavior are then governed by an explicit *sontaku*-like way, where users attempt to post memes, images, links, and comments that will please their community and are then awarded with votes that push their material up to the top of the page, and conversely undesirable posts can be voted down. This "up-vote" and "down-vote" system operates as a corrective measure to preserve a community's belief and identity.

Similarly, Twitter, based on followers and settings, normal users can perfectly filter their reality to only consume, communicate, and interact with individuals and events that interest them. Though, Twitter's *sontaku* system, like that of Facebook, and other major media services have become more algorithmic based on consumption, implicit. This is a departure from the more utopian and positive view of the algorithm that Azuma (2011) took. Algorithms focus on the rate of searches, keywords, and consumption behaviors to bring information and resources it predicts to users first. Search engines are designed to provide targeted advertisement without concern or interest in the verifiability of the information or news it presents. In this regard Azuma and the construct of his *General Will 2.0* does not match the undemocratic nature of advertisement and the transformations of consumption and habit online. *Sontaku* can easily be converted into a western ideal through the adage: "the customer is always right." Here the algorithm and these companies are not directly at fault but are simply performing *sontaku*-like cultural behavior for their superiors, the consumers themselves.

Azuma (2011) believed despite the perceived isolation of these islands cross-communication and information exchange was inevitable saying, "…Twitter is also equipped with features that traverse these [*shima-uchu*], somewhat forcibly pulling users out of their micro-communications. At the very least there exists a menu that we could interpret that way" (pp. 182-183). In Casilli's (2012) performative mode, a media service like Twitter operates as a platform, functioning as a system of renewable and dialectically processed self-spontaneity. This spontaneity and renewability are the reproduction of the ideological structure which opens up the opportunity for Internet communities to break out of their respective *shima-uchu* spreading some concepts to others through objects such as memes. Though, these messages are not necessarily understood in context by communities outside the original.

Consider, right-wing movements and their success on the Internet with their ability to use the Internet in creating political change that suits their agenda (Nagle, 2017). Right-wing online movements have found their footing in the ideological landscape of desire. Fujioka (2019)

described Japanese netizens in the early 2000s that spent most of their time online discussing media and pop culture using 2 Channel (2 Chan). Users communicated within their own *shima-uchu* (a specific category or subgroup) and reproduced their own ideological beliefs, restricting their consumption and selection of data to their own respective collection of trusted sources. Kitada (2005) outlined the emergence of a deep cynicism in the consumers of media in Japan. These communities adopted the method of delivery akin to that of variety, talk shows, and game shows that operated on a consistent "insider" knowledge that was only understood by long-term viewers over long periods of time. This type of coded communicative behavior is represented in Internet communities through their selection of jargon, slang, and memes. The very language between *shima-uchu* are foreign to one another.

Azuma's (2011) project embodied a sort of "sentimental post-modernism," visualizing and releasing our unconscious desire, respecting our biological (natural) instinct, and developing global life spaces without national borders on the Internet, a society governed on emotion rather than reason (pp. 238-239). Conversely, from the perspective sites like 2Chan, the media could not be trusted and the only narratives that mattered to these emerging right-wing Internet users were self-contained ironic ones constructed in isolated communities online in contradiction to Azuma's theory. Netizens did not abandon logos rather embraced a new system of language and code that further isolated their *shima-uchu* from others. Azuma's thesis fails precisely because of the misrecognition of the unconscious functioning as language itself. Therefore, *shima-uchu* and the exponential expanse of information both true and fake is a major challenge.

We can describe two worlds of media consumption, a decentralised self-reproducing and reinforcing series of Internet sites such as Reddit, 2Chan, 4Chan, 8Chan and offshoots designed to reproduce conspiracy and critique of media from the cynics perspective, and on the other hand a rapid centralisation of social media services and advertisement algorithms through Google, Facebook, and Twitter. Each use their own distinctive *sontaku* strategies, the former uses a vote and comment systems which embodies desire to conform, and the latter an algorithmic filtering based on consumption. Internet media consumption continues to grow, despite an increase in engagement, one of the core issues with how news and information is disseminated has gradually been centralized into big data through algorithmic advertising. Companies such as Google and Facebook are marketed and identified not as big tech, but as firms concerned with advertising (a major if not the primary source of their revenue).

4 Japan's Information Consumption Behavior

Sontaku culture is best described as the embodiment of the algorithm and the hierarchal structures on the Internet in that it measures and predicts the desires, interests, and needs of subjects and provides that specific information or access to users. This is indicative of the modern Internet culture, the idea that there is too much available information, and the need to selectively view, and enjoy targets of information focused around desire or a user's specific online community. Social network services (SNS) serve as the primary "gatekeeper" for Japanese consumption of news and media on the Internet. Hodaka's (2018), *Nippon Hōsō Kyōkai* (NHK) survey conducted titled, "Behavior and Orientation Towards Digital Information and Media," was a questionnaire conducted in 2018. It was distributed across Japan and targeted people ages 16 to 69 years old. NHK eliminated non-Japanese respondents and then calculated responses for n = 2,369. The questionnaire contained 24 main items with a series of sub-questions connected to each item. The primary focus of this survey was to analyze media consumption among Japanese citizens.

The survey reported that most respondents (84%) believed there is too much information in society. Additionally, younger people tended not to consume information based on interest (Consume by interest:16-19: 39%; 20-29: 45%; 30-39: 34%). Women tended to agree less with this assessment and at a greater rate claimed not to agree with the statement of consuming information that is solely their interest (Women: 20s: 44%; 30s: 29% Men: 20s 45%; 30s 38%) (Hodaka, 2018: 27-28). Hodaka also found that more than 50% of younger people (in their 20s) prefer passive accumulation of political, economic, and societal news through occasional or incidental interactions. Further, respondents between 16-19 (more than 60%) and respondents in their 20s and 30s (40%) preferred to only consume positive information about things in which they were interested (Hodaka, 2018: 31-32).

In Japan, most young people consume Internet news via SNS. They stated that they believed the most important points were credibility of the source (34%) and the speed of delivery of this information (33%), (Hodaka, 2018: 32-34). However, consumers of information were passive and selective in their consumption and most youths and young adults consumed media through SNS providers such as: Line, Twitter, Instagram, and Facebook (p. 23). Based on this data, two fundamental threads of media consumers in Japan, the serious and casual user. The more serious or experienced users of the Internet tend to operate within the framework 2Chan and other Internet sources, and the less experienced users tend to favor SNS services. The NHK survey provided the basis for our own survey, we conducted a questionnaire on consumption behavior and fake news on the Internet.

5 The Study

5.1 Method

We distributed a questionnaire with seven questions each with a series of sub-questions measured with a Likert-like scale of 1-6. The questions asked participants about consumption of SNS, here we asked about frequency of use and platforms that they used, consumption of streaming media on the Internet, topics and consumption of media specifically, preference ranking of media used, opinions related to fake news, consumption preferences such as what types of information they sought out on the Internet, and opinions about a series of statements concerning information dissemination and preference.

5.2 Participants

We surveyed a group of young university students in the Hokuriku region (Ishikawa, Toyama, Fukui prefectures) of Japan (*n = 97*) ages ranging from 18 to 24 years.

5.3 Results

Of the 97 respondents, we asked that they rank reasons the benefits/advantages of SNS over traditional mass media, the survey included 16 items (2 of which were “nothing particular” and “other”). Of the responses, 44 of them were concentrated among four items (See Table 1.). Among the 1st ranked advantages and benefits: 29 respondents reported that “getting information instantly” was their primary benefit of SNS, 23 respondents cited “selecting information based on preference.” We can infer that participants were more interested in the topics related to their own *shima-uchu* rather than issues about society at large, and that the speed of the information (not accuracy) is more heavily favored in consumption choices.

Table 1. SNS Advantages over Mass Media

	1st advantage	2nd advantage	3rd advantage
Getting information instantly	29	10	7
Select information based on preference	23	21	12
Knowing the latest popular topics/trends	7	5	4
Encountering various topics	6	8	12

Figure 1 shows participant agreeability related to other people's opinions using a Likert-like scale (1-6). This data revealed that respondents are generally accepting of other opinions on issues and information (*n = 97*; *m* =3.86, *se* = .149). The results indicate slight agreement with the statement: "I easily accept other people's opinion." This suggests that respondents are likely to accept opinions displayed in their SNS news and story feeds with little interest in critiquing or verifying the data.

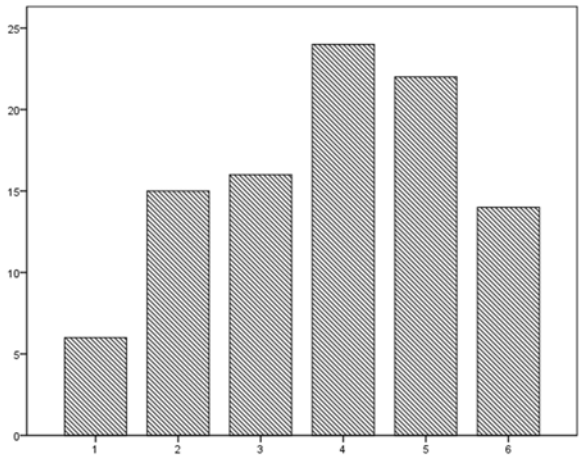

Fig. 11. (6-1) I easily accept other people's opinion

Figure 2 shows the other side of the concept in Figure 1 Respondents rated the statement: "I always pay attention to how people think about me." The figure shows a stronger agreement suggesting that respondents are concerned with their public appearances (*m* = 4.34, *se* = .149). This can be inferred back into their SNS behavior as they would prefer to maintain a positive image and avoid conflict where possible and this positive image correlates with their perceived popularity which can be inferred from follower numbers or positive response to their media posts.

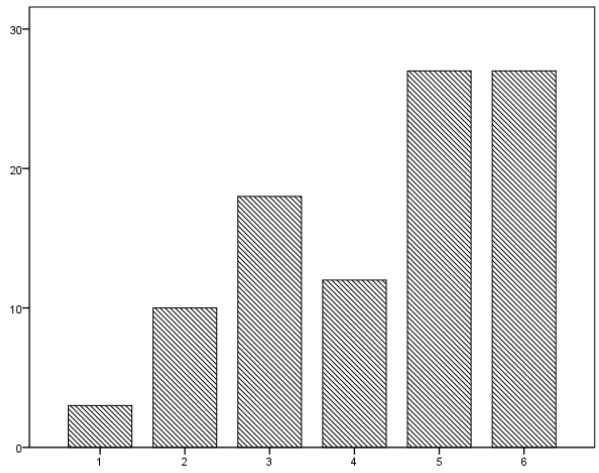

Fig. 2. (6-2) I always pay attention to how people think about me.

Figure 3 shows the tendency of how *sontaku* culture functions to construct the respondent's identity. The respondents rated the statement: "I believe that things that are widely accepted socially are valued." Most respondents indicated agreement (*m* = 4.40, *se* =.123). In a society overloaded with accessible information, tradition is the easier and assured value that most people trust. Subjects rely on the process of "inventing tradition" though through this act they could create *sontaku*-approved fake news.

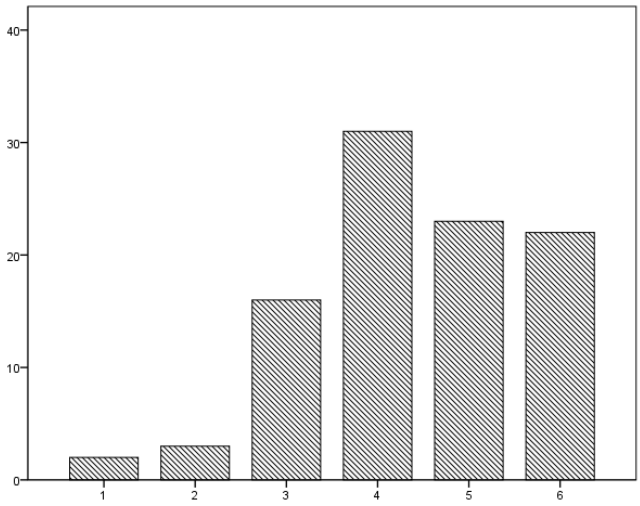

Fig. 12. I believe that things that are widely accepted socially are valued.

6 Discussion: the Other of *Sontaku* Society is the mirror of Self, the "Avatar Self" in Internet Society

General Will 2.0 required the algorithm to operate without an operator, however, ideology (unconscious) and *sontaku* culture (both explicit and implicit) are the manipulative forces behind the algorithm as they influence participants desire. Azuma (2011) believed democracy to exist through the efforts of disseminating information in manageable chunks by pulling ideas from a given island and sharing them across the spectrum of online communities. The solution is representative in the form of an algorithm. He argued that the purpose of the algorithm is to communicate the desire of the population. Consider the algorithm and its implicit *sontaku*-like behavior. In the Japanese context, excessive searching for political news or economic results seemed to connect with advertising that presented towards erotic games and manga, this is the legacy connected back to 2Chan and the cynical right-wing net users who consume both media and seek enjoyment in their own *otaku*-esque *jouissance*. Japanese youth, more than ever, regularly check and engage in social media though without a clear concept of politics, history, or theory. This lack of concepts and engagement in politics and theory could be another face of the cynic, a general belief in the inability to make change. Their concerns rest on their image, and opinions of others, this is one of the realms of *sontaku*. They must work to please those around them to some degree for recognition.

Online society confirms a type of performativity identity. This performativity carries with it the risk of discord with one's identity and to their perceived personal value in society. This represents a catastrophic destiny for the marginalized subject and the Internet communities at large that perpetually isolate themselves from the larger society and ultimately lose any capability of reconnecting with society at large. They seek, therefore, the other to identify themselves, but it is only a mirror, in a Lacanian-Žižekian sense. In the *shima-uchu* based Internet

society, residents' mirror is the monitor of a computer (Žižek, 1997): the other of the s*hima-uchu* residents is perceived as the avatar itself. The formation and management of the online self is mediated through the "avatar" or in some cases the "username" or "nickname" the user chooses to go by (Casilli, 2012). The common interpretation might read as; the symbolic characteristics of the user are adopted into a sort of "mask" that the user wears when they enter the online realm. However, Žižek would content that the "mask" is the true self, that the Internet and its *sontaku* oriented *jouissance* offers a space for Internet users to reveal their true self, beliefs, and to hide in their own fetishisms avoiding the eye of the society at large. In other words, the online persona is the person and their public self is a performance that satisfies the material needs them to continue living in their virtual world.

7 Conclusion

In the Japanese context, *sontaku*-oriented culture operates as an unseen and symbolic mechanism controlling the behavior of the algorithm that guides the residents of their respective *shima-uchu* in their continued search for *jouissance.* This reading of the atmosphere centers itself into each respective island. Users, in their avatar or Internet persona navigate their respective world oblivious to or disinterested in the larger constellations of *shima-uchu,* a *tagen-shima-nuchu* (multiverse). This is the question; is ignorance or simply a lack of interest, as our survey and the Hodaka's survey suggests, the cause of Japanese Internet consumers preference to seek out information they are interested in and not to explore larger issues. Conversely, could it be *sontaku* is the big Other symbolically managing the algorithm that clouds user perspectives and prevents them from seeing the information horizon beyond their own limited pool of friends and interests. Ultimately, residents of their given *shima-uchu* only know their universe, this is both the limit of their human capacity and the power of the algorithm in filtering content based on the implicit consumption behavior of the user leaving them with flickering interest or a vague notions of the content of the Internet beyond their realm. This limitation of the human experience and its mediation through *sontaku* creates the perfect recipe for the proliferation of fake news. The Internet user seeks their joy and *sontaku* operates precisely protect them from sources and information that may limit them or challenge their bias.

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The Library and Systematic Reviews in Social Sciences

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Abstract. Recent years have seen a growth in requests for library assisted systematic reviews. This growth has been especially noticeable in the social sciences, a trend we hope to shed some light on in this paper.This paper will briefly outline systematic reviews as they apply to social science (and offer some thoughts as to why they are on the rise now), present a toolbox for librarians hoping to get involved in this kind of work, and finally give a few words of caution (time spent, authorship, etc.).The University Library at the Norwegian University of Science and Technology (NTNU) has collaborated with researchers conducting systematic reviews for a long time. However, this work has been mostly confined to the medical field. Systematic reviews in social sciences differ from the medical field in a number of ways: there is no agreed upon vocabulary in social sciences, the databases are more varied and therefore there are issues with poor metadata, duplicate references, etc. Increasingly, social scientists see a need for raising the bar of their literature reviews. There is much talk about echo chambers in the public sphere these days. It is naive to believe that (social) science cannot also have its own echo chambers. By collaborating with the library in designing the search, in selecting the databases and also in screening the references, researchers can raise the quality of their work, while focusing on the substantive issues of their field.

***Keywords*:** Systematic Reviews; Social Science; Embedded Librarian; Research Support; Rayyan; Endnote; NVivo

1 Introduction

In recent years we have seen a growing number of requests asking the library to assist in the research process. Systematic reviews[1] are increasingly seen as a good way to find the research frontier and identify gaps in our knowledge. A systematic review is a "[...]review[...] of the research literature using systematic and transparent methods" [1]. The aim of a systematic review is to find all the relevant publications on a given subject, systematically and transparently document the process and then synthesize the information thus gathered.

Increasingly the problem facing the researcher is not access to information, but finding good strategies for sorting, organizing and re-find information. The systematic review, previously the preserve of the medical sciences, holds promise also for the social sciences as a way of 1) identifying the research frontier and 2) organizing the knowledge needed to push forward. The research librarian is uniquely suited to assist or even lead this process.

As the researcher approaches his/her chosen project, immediately s/he is flooded with information; numerous databases, each with their own baffling syntax; and a number of tools for the tasks of finding, choosing and organizing the information: reference managers, software for screening, and analytical tools. We have found that the library can provide an invaluable service to our host institutions (and the academic community at large) by guiding the researcher as s/he navigates these issues.

[1] Systematic reviews is the term we will use throughout this paper. There are a number of different types of works/methodologies that try and achieve the same goal (scoping review, systematic review etc.), but we are referring to the overall approach of systematizing the search process in the social sciences and reporting these. For a discussion of the various systematic approaches to literature review, see [1].

The systematic search often consists of the following phases: writing/refining the search protocol, writing/refining the search string (and translating it to the databases to be searched), downloading the search results, screening the results, reading the included studies and analyzing them. In the following we will detail this process and our experiences working with researchers in this field.

Traditionally researchers have relied on personal networks, colleagues and ad hoc search strategies. This means that the same literature is frequently cited, and this gives a permanent imbalance to the systematic reviews. Traditional literature reviews are all too often restricted to literature already known to the authors, or literature that is found by conducting little more than cursory searches. This means that the same studies are frequently cited, and this introduces a persistent bias to literature reviews [2]. New requirements to the research process and the research results and with large quantities of available literature makes it challenging for the researcher to gather the information, but also to find the right tools (databases, screening and extraction software, other software) and how to use them. In the medical sciences, the systematic review article is an established genre. Borrowing the techniques from the medical field allows the social scientist to approach their field in a new way. This is where the research librarian typically enters the picture.

The University Library at the Norwegian University of Science and Technology (NTNU) has collaborated with researchers conducting systematic reviews for a long time. However, these cooperative efforts have mostly been confined to the medical library and their patrons in the medical field. But in the last few years we have seen a change in the field of social science. Increasingly, researchers are approaching us, wanting our help in systematic reviews. There are certainly differences between the approach and results in medical science and social science in general, but also in conducting systematic reviews: the databases differ, subject terms (and obviously the lack of MESH terms in social sciences). Nevertheless, the systematic review article (in its various guises) is here to stay, including in the social sciences.

2 Systematic Searches

The volume of scientific literature has grown exponentially in the last 50 years. Finding the existing science is challenging [3]. In the following we give a brief description of the systematic review as a method and genre, with an eye towards its application for social sciences.

The systematic review method has become the gold standard of the medical field, but today the method is being adopted and standardized by other disciplines [4]. Today systematic reviews are frequently the basis of guidelines and policy development in many fields such as public health and education [1]. At NTNU there is a growing tendency for fields like sociology and gender studies using systematic reviews as a method. Systematic reviews are very important to keep abreast of the literature and make informed decisions. Searching is a critical part of conducting these systematic reviews. Searches for systematic reviews need to be constructed to maximize recall and deal effectively with a number of potentially biasing factors [5]. In a systematic search, the data collection must be documented and verifiable, and it must be planned and reasoned [6]. Systematic and transparent methods are an advantage as they will help us remember how we reached our conclusions, but it will also be easier for others to consider whether they agree or disagree with our assessments. Systematic and transparent methods also help to promote consistent assessments [7].

The most difficult part of all is translating the research question and eligibility criteria into an appropriate search strategy [1]. This is especially true for systematic reviews outside of the medical sciences where the genre is well established: the social scientists might see the utility of the overall study design, but may not initially understand the need for selection criteria.

Drawing on the research question to create such a good search strategy that finding literature that answers what you are looking for is a major challenge and requires knowledge of the subject in which you are designing the search strategy. Knowing the terms and concepts used is a prerequisite for this to be successful. The next step is to know the contents, limitations, function and user interface of the databases in order to put together the search for a good search strategy. Experienced searchers must generate the independent search strategy required for varied databases because of lack of standardization of databases [3]. Systematic reviews require access to a wide range of databases and peer-reviewed journals, which can be problematic and very expensive for non-academic researches and small organizations. Mallett et al. [2] points out that the systematic review process is extremely resource intensive and demanding and a time-consuming process. For our purposes, this can lead to some tough decisions: can the library afford to dedicate staff hours to this activity? If yes, do we need to differentiate between requests from our host institutions and independent researchers?

3 The Databases

The databases used in the social sciences, the humanities and health are often interdisciplinary and with different uses of terminology. Compared to several of the medical databases where thesauruses exist, almost none of the social science and humanities databases have this. Databases will behave differently given the same search string. In some cases, changing the order of the keywords in the search string could change the result set. Boolean logic does not work as [8].

Some of the literature in these disciplines is gray literature, which is why there is also importance with hand searching. Hand searching can be challenging, and it is an advantage here with a good network in the field. It also makes sense to discuss the issue of the hand searching (that is, including references not found in the systematic search itself, but rather “by hand”): some of our collaborators are a bit skittish about including this material in their search, arguing that the search strategy should be fine-tuned in such a way as to include everything relevant. Unfortunately, this is all but impossible to achieve in the field: there will always be some references which are not found. Including these from a hand search is inevitable. If such a discussion arises, it is the research librarians role to clarify the situations for the researchers: assuming the search strategy is sound and through, including hand searched references is allowable and needed. The whole research team need to remember the whole point of the systematic search: finding all relevant material and showing how it was done. Hand searching has a place in this process, especially in social science.

When it comes to transferring references from the different databases, there are differences, and some may present challenges. Search in the social sciences field often result in large hits and therefore large numbers of references to be transferred to a reference management program. Some databases only allow a small number of references to be downloaded at a time. . This means that you must perform several frustrating operations before all references have been transferred. The more flexible databases allow up to 2000 references to be downloaded in one operation. . A special concern for social researchers in Norway is the discovery tool used by most university libraries in Norway, Oria. This is the portal used by our patrons to find literature. Social scientists often want to include book references in their systematic searches. This has proved very difficult, since Oria only allows single references to be downloaded at a time.

4 Toolbox

Since systematic reviews are not yet a set genre in social science, research librarians can bring lots of useful suggestions to the table. The number of references can be overwhelming for the project leader [9] and they will often be very open-minded if we make suggestions that can help reduce the amount of work.

In the following, we give an overview of some of the tools which we have found to be of use in the systematic review process. This is by no means a complete list, nor will all the tools be useful in all situations. However, any serious research librarian planning to work with systematic reviews in social sciences should at least know that these tools are available.

After the strategy is completed, the research librarians sit down and execute the search. The results then need to be downloaded. We recommend using Endnote (although most modern reference managers will work) for gathering the references. Endnote allows us to group the references into groups (useful both for analytical purposes, but also troubleshooting), easy export of the references if needed, duplicate removal and finally automatic download of full-text pdfs. These functions are all fairly basic operations, and the interested reader is invited to consult the Endnote homepage (https://endnote.com/) for more info.

Rayyan is a tool we use when collaborating with researchers during the process of screening and selecting which references go on in the process. Rayyan (www.rayyan.qcri.org) was something of a game changer for us. Before Rayyan was brought to our attention, we had to use Endnote for the screening of references. This is not very efficient. Rayyan is a web-based software, used to screen the references found in the search. After uploading a bibliographic database (e.g., an Endnote library), the project leader can invite participants to read the abstracts/titles of the references and then “vote” on whether to include or exclude the reference in the dataset. Another useful feature is labels, which allows the reader to tag references. These tags can later be used for sorting references, either in Rayyan or using a reference manager.

After screening the references in Rayyan, the references are exported and opened in a reference manager. Using Endnote, we are able to get most of the pdf files needed for the rest of the process automatically (using the “Find Full-text” function). We usually find many, but not all the pdf files we are looking for this way. The rest must be ordered manually from the library interlibrary team.

After we have the pdf files available, the process is at a crossroads. Either we transfer the endnote library file to the researchers, and they start the process of reading and synthesizing the literature into a summary of the field under investigation. This is often done by dividing the literature among the researchers and they each summarize what they have read and collate it into a document. Another approach is to use NVivo to both read and do some of the analytical work. NVivo is a program designed to help with qualitative analysis. References and pdf can be thought of as qualitative data. Using NVivo, we can also make use of the label function in Rayyan: if the screening also included tagging each included article with meaningful tags, we can now use NVivo to get an overview of these. Tags can be pretty much anything of interest to the research project. In a previous work [10], we used NVivo to tag references with “country”, “method” and so on (at the time we had not found a easy way to use the tags from Rayyan and had to tag in NVivo instead). This allowed us a very convenient way of identifying where the gaps in the literature lies. This can, of course, be done using other tools (excel sheets, or even pen and paper), but NVivo allows for a seamless workflow from reading to tagging to visualizing. We are further developing our work process in NVivo as it relates to systematic searches, with an aim to use NVivo to compare the literature we find in our searches against “model references” (i.e., the references that the researchers that are instigating the systematic search point to as the most relevant references in the field).

Flowcharts are a good way to keep track of all the steps in the process and for systematically reporting the systematic reviews. These diagrams are an important part of the process of reporting reviews as they enable readers to see all the references retrieved in the review. The diagram summarizes the many reasons that out of the references found initially by an extensive search strategy were identified [9].

5 The role of the university librarian

More and more universities and colleges offer their involvement in the systematic review process with the systematic search process. Koffel (2015) recommend including a librarian or search specialist to improve search quality when designing and conducting the literature search [11]. Koffel claims the librarians have qualities in the search process and the reporting will improve the quality of the review and the replicability and robustness of meta-analytic findings. Koffel claims that despite the positive impact of librarian involvement on the development of search strategies and the relative ease with which this variable can be modified, librarian involvement is still low, and their contributions need to be better acknowledged in the published article.

The level of involvement and consequently the role of the librarian will, of course, vary depending on the specific project and its needs, but it will also vary depending on the expertise of the librarian. Some librarians are very comfortable with the software involved in the systematic search, others are more at home constructing the search strings and selecting databases. The systematic search process is often more convoluted than expected by our patrons, and we have found it to be a great asset working in teams to better complement each other and our different skill sets.

The research librarian(s) should early in the process consider taking upon herself the role of data steward, ensuring that all participants in the research project are using the same data standards (e.g., using Rayyan to tag/include/exclude in a consistent manner), version control (ensuring all team members use the same search string/Endnote file), and also long-term storage and access control to the datafiles generated in the project. While these points might make sense on an intuitive level, they should be formalized and preferably written down in a data management plan (DMP). As luck would have it, the formalization of a DMP is increasingly being demanded by financers in Norway (and Europe more generally), and using a systematic review process as a “training wheels” can be a very good way for the library to learn and understand this process. Here we as a library have a golden opportunity to fully enmesh ourselves in the research process, bringing added value to our patrons and host institutions.

Whatever our degree of involvement, from the very superficial to the fully integrated, the library should provide researchers with a sounding board for testing out searches and ideas for further research. While research librarians often have a strong grounding in the research field, we are not competitors: we are not chasing the same funding or tenure positions as are our patrons. Openness and close dialogue are important factors here: researchers expect us to go above and beyond if we choose to get involved in their research projects.

The role of the university librarian in general is changing, but also with regards to systematic reviews. In the social sciences, this is a genre that is growing and changing, and we are uniquely positioned to contribute to the research quality of our patrons and collaborators. At present the role is dynamic, not static. In the future this trend will continue as new tools are added to the tool box of the systematic review. Our research staff will look to the library for guidance on how to use these tools, and in many cases will ask us to join their efforts. This is all assuming we can deliverer good data and analysis at this stage of the evolution of this field. This is a golden chance, and we ignore it at our peril.

6 Conclusion

Systematic reviews are likely here to stay, including in social sciences. The goal of this paper is to encourage other libraries to consider offering these services to their patrons. This paper hopefully provides some pointers, both on an overall level, but also with regards to concrete tools that can help in offering this service. Getting involved with research on such a close level can be intimidating but will offer rewards both for the library and the individual research librarian.

Performing the systematic search process is time consuming, it can take days or weeks, maybe months to work in this process. The challenge for librarians is to find time in the jungle of everyday tasks. Contributing to systematic reviews is a new task (at least at our library) and it is not clear the level of commitment is required by the task nor how much time the library leadership is willing to allocate. One of the projects we co-authored [10] did receive funding from the Norwegian government. This, of course, raised the question; how much (if any) of these funds should go to the library? Of course, the overall question here is: should the library charge for this service? Our firm opinion is that the library should not charge for this service but should demand a (small) part of funding if funding is applied for (and awarded) from external parties.

More important than raising money is the fact that research librarians have a chance to make their mark on the research field. Co-authorship can be a delicate issue, but it is one that needs to be addressed (preferably early on). We have found this to be a straightforward issue to discuss with our collaborators, despite our early fears about this: most researchers have clear ideas about this, while librarians are not used to thinking about these issues (beyond a theoretical understanding of the ethics). We would do well as research librarians to think of the systematic search more like data collection: had we been writing the questionnaire, done all the interviews and then participated in the analysis of these data, the issue of co-authorship would have been a non-issue. The same holds true for the systematic search: without the assistance and work done by research librarians, the data collected would not have been collected (at least not in the same way) and the analysis would have looked very different. There are, of course, instances when we merely provide advice on the search strategy and nothing more. In those cases, we, of course, do not claim co-authorship.

If a library decides to offer this service, it is vitally important that the whole organization is on board; leaders, colleagues and, of course, the librarians directly involved in the systematic search need to be prepared to dedicate the time and resources needed to complete the task. Collaborating on any research project is a matter of trust, and if we are given the necessary trust needed to be involved in the project, our work must be of high quality and be delivered in a timely manner.

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Library management of personal digital legacy

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Abstract. As more and more previously physically existing mementos get converted into digital content, so does the demand grow to preserve these for our families and acquaintances. The task is difficult since at present there is no known data storage solution that can securely store digital data for an unlimited time or at least for a human lifetime. People use less and less paper in their everyday lives, and the time might come when we do not use paper at all, and we store every information in the form of bits. This phenomenon can bring with it the digital Dark Age. In history those time periods are called Dark Age from where very little material is left behind which could tell about certain era. The main reason for the spread of false theories, news and theses is the lack of accurate information and ignorance of the facts. If an era were to become an information black hole, it would do exactly that in the historical perspective. Libraries have the opportunity to become an active participant in the efforts towards preventing the 21st century from becoming an information black hole in history. There are many priced digital legacy management services on the web the background of which we barely know, and still they have been functioning for years, which signals a strong user demand. In my presentation, I will present operational models of these services and outline a possible way for the libraries to play its part in managing personal digital legacies.

***Keywords*:** Digital legacy; digital Dark Age; information Black Hole

1 Introduction

As more and more physical objects (such as correspondence, photographs, collections) that previously existed in physical form become digital content, the need to preserve them somehow for our family and acquaintances grow. This is a difficult task as we do not currently know a data storage solution that can safely store digital data indefinitely or for at least one human lifespan. Most people encounter data loss throughout their lives, sometimes with data that can be easily replaced, sometimes with data that equals a smaller personal tragedy.

Compared to relics that exist in physical form, digital legacy is more vulnerable, and if someone does not care about saving them during their life, their heirs must give up on invaluable things. However, not a lot of people care about the simple fact that what is going to happen with their data that exist only in digital form after their death, and what they should do not lose them. Passing is not a topic the people like to talk about, so usually they do not initiate saving these data for their heirs. So that is why lots of valuable and important memories are neglected.

2 Digital legacy definition

Digital legacy is more than pictures and texts. It turns up in more and more fields of life. It becomes hard to overview and follow, what someone's digital legacy actually is. An interesting phenomenon is that digital legacies are in big companies' (such as Google, Facebook, YouTube) hands. In several cases we tend to believe that these services will exist forever, although we are

talking about pretty fresh companies e.g., Facebook started in 2004, and its global spread just happened later.

When we are looking at legacy as every other data (picture, text, account, password, etc.) we are talking about a passive collection which tells both wrong and good about its owner. There are active collections too, which are the data that appears publicly in a human's lifetime. The mentioned active collection's part can be a photo album which is in the most preferable setting of a person, and it is published on a social site. Lot of digital data can be created which are not designated as value, but later becomes one. A simple photo in a smartphone's memory can be goodwill value to heirs or historians.

Personal digital value is almost impossible to reveal if the past owner does not make it visible during their life. Recently law-makers recognized the importance of some kind of regulation, guidelines. That's why the first government legislation and recommendations to deal with digital legacy have already been published.

The most sophisticated legal regulations exist in the United States, where several Member States (such as Connecticut, Delaware, Idaho, Indiana, Nevada, Oklahoma, Rhode Island, Virginia) have accepted regulations (National Data Protection and Freedom Authority, 2015) [1] that although in a limited way, gives the heirs and relatives access to the personal data of the deceased. In addition, the United States also provides federal legislation on access in the Uniform Fiduciary Access to Digital Assets Act, adopted in 2014 and revised in 2015. In the European context, we can mention the recommendation of the Hungarian National Data Protection and Freedom Authority (2015) [1] on the fate of online data after death, and the recommendation of the British Data Protection Commissioner on the public treatment of a deceased person's data by public institutions (Information Commissioner's Office, 2013) [2].

3 Difficulties in digital legacy management

Many people tend to view their files archived on electronic data storage as being perfectly secure and their integrity cannot be lost over time. Optical disks (such as CDs, DVDs, Blu-ray Disks) can have a lifespan of up to 100 years, but this depends greatly on the conditions under which they are stored. Their lifetime is affected by light, humidity and temperature. Therefore, their actual usability is well below the theoretical maximum, but even 100 years is extremely short compared to the oldest written analog document dating back to the time of King Cheops, which is already 4,500 years old.

Hard disks, which store data on magnetically coated disks, do not allow long-term storage of data either, because the magnetic signals recorded on the disks' surface deteriorate over time, this can damage the integrity of the data.

Archive storage on a solid-state drive (SSD) is a better solution than optical and hard disk data storage because it promises a much longer operating life, but is still too expensive to be widely used for archiving, moreover, redundant data storage is also required when using this technology.

More and more people are storing their digital data in so-called cloud storage. Cloud computing is a sector of computing. There are several types of cloud-based services, but what they have in common is that the services are hosted on the provider's devices rather than on dedicated hardware devices. In a cloud-based system, user- created files and settings are never stored in a single instance on a specific server storage, but in a redundant manner, usually at least 3 copies in 3 different mass storage. This ensures that if a provider's device fails, there will be no disruption in service. However, we cannot be sure that our data stored in the cloud will be completely secure and will never be lost. In the history of cloud computing, there have been several cases of data loss, one of the most significant of which was the accidental deletion of

approximately 150,000 email accounts by Google in 2011. A faulty software update not only removed some of the data stored in the accounts, but almost all copies of it. In this case, users were lucky enough to have Google archive all of their data on magnetic storage, which, albeit very slowly, could recover lost data. Magnetic tape technology may seem outdated, as technology is no longer used in everyday life, yet it is still one of the most durable and best value-for-money storage solution.

4 Efforts of the library for saving digital legacy

Even before the turn of the millennium, the Library of Congress and other library organizations recognized the need for the library to play a role in managing digital heritage. In 1998, the Library of Congress set up a working group to develop a comprehensive digitization strategy. Two years later, Congress awarded the library $100 million in support of launching the National Digital Information Infrastructure and Preservation Program (NDIIPP) to preserve digital information resources (NDIIPP, 2003) [3]. In 2010, the Library of Congress established the National Digital Stewardship Alliance (NDSA), which has been joined by many institutions (universities, companies, government agencies) with the common goal of formulating standards and policy for digital content preservation. Since 2016, the organization has been operating within the Digital Library Federation (DLF).

5 Digital legacy management as an industry

More and more people are realizing that there is something we need to do to preserve our digital heritage, and some see this as a business opportunity. The idea is not entirely new, companies have been dealing with asset management for a long time, but the management of digital legacy requires quite different competencies and technical conditions. The so-called trust institution has long existed in the Anglo-Saxon legal system, but it has been transposed by some countries with minor changes. In essence, the principal transfers their assets temporarily or partially to the trustee.

Digital heritage companies / businesses are similar. The owner of the digital data entrusts the trustee, in whole or in part, with their digital data, passwords or pre-written messages that they wish to pass on to their loved ones or acquaintances.

Dozens of parallel end-of-life planning services indicate that they are in great demand. However, it is not easy to choose a service that we can reasonably assume will remain available over the long term to our digital content stored over its interface and will certainly be accessible to our heirs after we die. Most services are run by individuals or by a small association or company that typically employs up to 2-3 people. Perhaps that is why it is not surprising that the average age of currently operating services is only 6 years, but most of them are younger. The low average age is due, on the one hand, to a relatively new and immature area and, on the other hand, many services cease to operate after only a few years of operation.

Seeing the number of discontinued services and seeing that most inheritance services are only a few years old, we may wonder whether our digital data is more secure with these providers than if it were stored on our own computer or on an external storage device. The familiarity and long-term operation of some services provide some guarantees of reliability and long-term operation, but can they guarantee that they will retain irreplaceable personal information for life?

Indeed, long-term storage of digital data has been a problem for decades, and several policies and standards have been developed.

6 Trustworthy Digital Repository (TDR)

Perhaps the most important of these is the Trustworthy Digital Repository (TDR). Its first comprehensive definition is contained in a joint report by the Online Computer Library Center (OCLC) and the Research Libraries Group of the United States (RLG): “A trusted digital repository is one whose mission is to provide reliable, long-term access to managed digital resources to its designated community, now and in the future.” (Research Libraries Group, 2002, p. 3.) [4].

Following the creation of the concept of a trusted digital repository, several different models have been created that describe in more detail what a trusted digital repository is. The most well-known theoretical model is the Open Archival Information System (OAIS), developed by the Consultative Committee for Space Data Systems (CCSDS) and finalized in 2002 by the International Organization for Standardization ISO 14721: 2003 (ISO, 2003) [5], the latest version of which is ISO 14721: 2012 (ISO, 2012) [6]. The CCSDS Working Group brought together national space agencies interested in preserving highly valuable space data. OAIS only formulates principles, so it does not implement specific technical criteria.

Information management professionals have realized that it is not enough just to lay out a theoretical model for a reliable digital repository, somehow to validate its compliance, and to create a certificate that can be awarded to repositories that have been successfully authenticated. The U.S. National Archives and the Association of American Research Libraries have developed a Checklist for Certification of Trusted Digital Repositories (National Archives and Records Administration, 2005) [7].

In 2007, a new document, TRAC (Criteria and Checklist) (TRAC) was created as a further development of the checklist, jointly with the European Union, but in 2011 and 2012 it was also modified until it became an official standard in 2012 (ISO, 2012) [6]. The document breaks down the criteria for auditing and certification into three main chapters: Organizational Infrastructure; Digital object management; Technologies, technical infrastructure and security.

7 Digital Dark Age

Not long ago, historians took it for granted that they would go to paper documents to explore the history of an era, an event, the life of a famous person. If one of our poets passed away, his heirs opened his desk drawer, where they found his manuscripts, letters of remembrance, and memories. The great advantage of digital data storage is that you do not have to use paper to record information, making it much easier to transfer, copy and edit. People encounter less and less paper every day, and there may come a time when no paper is used at all, all information will be stored in bits. This phenomenon can bring with it the dark digital age.

In history, those times are called the Dark Ages, which left very few materials behind that can tell us about that era. Vint Cerf, one of the founding fathers of the Internet, says the dark digital age is threatened by the lack of truly reliable data storage solutions and the wide variety of computer file formats that require a variety of software to display them. Redundant storage on physical media or the use of cloud technology is only a temporary solution, as storage media (such as a hard disk, solid-state drive, optical storage, etc.) have a finite lifetime and cloud servers are operated by large technology companies that may eventually disappear. According to Vint Cerf, if no solution is found, the entire 21st century could be an information black hole in the historical perspective (Ghosh, P., 2015) [8]. His concerns are also shared by David Thomas, former head of department at the National Archives of the United Kingdom. During his work, David himself has faced the fact that some electronically stored content has been lost forever (Donoghue, A., 2007) [9].

8 Opportunities of the library in digital legacy management

The library is an institutional system that has a long history of storing data and is able to build and manage digital data storage that meets all the requirements of ISO 16363: 2012 (ISO, 2012) [6] and related standards. The standard sets a complex set of criteria (organizational, staffing, and financing) for reliable digital repository operators that only a few can adequate. Larger libraries (and national libraries in particular) would be able to do so. In addition, it is an institutional system that is not market-based but is maintained by law in most countries.

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Open Access to Scientific Information as a Weapon Against Fake News: The Role of Librarians

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Abstract. Open access is an initiative that supports unrestrained access to information especially those found online in peer-reviewed journals. The 21st century is an era of information that is continually escalating at an alarming rate. Also, the persistence of fake news has added to the information pool thus creating a chaotic situation for the information user. Librarians who are purveyors of information have a major role to play more than ever before in the information environment by ensuring they are on guard to separate actual news from fake. Hence, this study investigates librarians in two federal universities in Nigeria. It specifically investigates their role in using open access to scientific information as a weapon to fight fake news. Four research questions were formulated to guide the study. The population comprised 53 academic librarians in the two universities. The questionnaire was the instrument used for data collection. Percentage and statistical mean were employed to answer the research questions. Findings reveal that DOJA, DOAB, Library databases and Institutional Repositories were the most common Open Access databases used as a weapon to provide scientific information and fight fake news. Various constraints in using Open Access databases to fight fake news were examined. However, a good number of librarians accepted that users' dependence on mobile phones and irregular power supply in the library were major challenges. The findings of the study places a demand on librarians to gear up for the fight against fake news by radically creating awareness on use of Open Access databases.

***Keywords*:** Open Access, Fake news, Scientific information, Academic Librarians, Nigeria, Federal Universities.

1 Introduction

Open access can be regarded as one of the wonders of the 21st century in the academic environment, it is the unrestricted use of information resources found on the Internet. Open access means that researchers and students are free to access various resources online and keep abreast of current publications in their fields. However, where use has been made, researchers are to duly acknowledge the sources. The Budapest Initiative which was heightened by the Bethesda and Berlin declaration of 2003 created more awareness for the open access movement. While the Internet provided the impetus for the development of open access, libraries continue to serve as knowledge repositories promoting access to information. The development of open access is timely to combat some of the challenges faced by librarians in acquiring scientific journals in the face of rising subscription costs and budgetary cuts.

The mandate to connect users to scientific information is a critical role of the library. As storehouses of knowledge, libraries bridge the gap between researchers and scientific information. Scientific information is a significant part of library collections and includes data, research findings, scientific discoveries which are published electronically, in print medium or distributed through oral presentation to inform, educate, impact or add to existing knowledge. Scientific publications contain scientific information and are products of intellectual exercise which may be theoretical or empirical. They are based on systematic and rigorous research

processes and are presented in various formats such as monographs, journals, reviews, reports, dissertations, abstracts, essays, books, etc.

Hence the library's position in processing and providing scientific information cannot be underestimated. Due to proliferation of search engines and massive information enabled by the Internet and facilitated by communication technologies/mobile devices, the medium in which scientific information is presented has diversified. Information is constantly circulated round the clock which has given rise to abundance of unauthenticated reports, stories and data known as fake news. The emergence of fake news places a demand on librarians to be more active in providing and making open access resources available to users. Hence, the current paper determines librarian's roles in open access to scientific information as a weapon against fake news in two federal universities in Nigeria.

1.1 Statement of the problem

The technology era coupled with abundance of communication devices have enabled widespread and dissemination of scientific information. In the midst of the escalating imbroglio, fake news is thriving. The persistence of fake news has added to the publication pool thus creating a chaotic situation for the information user; the challenge he faces is the authenticity of information at his disposal. Librarians being purveyors of information must ensure they are on guard to separate actual news from fake, by providing unrestricted access to scientific information. Studies abound on librarian's role in open access, however, it is not certain if the roles librarians play in open access is geared towards fighting fake news. Hence, there is need to investigate the roles librarians play in using open access to scientific information as a weapon to fight fake news.

1.2 Objectives

1 To identify open access journals/databases known to librarians in selected Nigerian University Libraries
2 To ascertain the open access journals/databases used by librarians to provide scientific information
3 To ascertain librarians role in the use of open access journal/databases to fight fake news
4 To identify the challenges faced by librarians in use of open access/databases to fight fake news

2 Conceptual framework

2.1 Open Access

A purview of literature exists on Open Access and the various initiatives that led to its development. Nevertheless, the concern of this paper is to have an understanding of the concept of Open Access. The BOAI provides a succinct definition of Open Access as the "free availability of information resource on the public Internet, permitting any users to read, download, copy, distribute, print, search or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal or technical barriers other than those inseparable from gaining access to the Internet itself" (Budapest Open Access Initiative, 2002). According to Haug (2019) "Open Access means the worldwide electronic distribution of peer-reviewed journal literature (completely free) and unrestricted access to it by all scientists, scholars, teachers, students, and other curious

minds". Alam (2014) defines Open Access as providing free access for all Internet users to scholarly information that is published or to be published in research journals.

2.2 Scientific information

Scientific information can be regarded as information emanating from a scientific research, publication or scholarly communication. "Scholarly communication is the process of sharing, disseminating and publishing the research findings of academics and researchers so that the generated academic results are made available widely and communicated to the global academic communities" (Anup-Kumar, 2015). In the work by Balakumar and Jagadeesh (2012) on the nature of scientific paper, Prakesh view that "original scientific research publications normally follow an IMRaD structure (Introduction, Methods, Results, and Discussion). Be that as it may, scientific information is a publication that has gone through systematic research procedure, rigorous process of peer review and disseminated online or other print media for the public good.

2.3 Fake news

The term fake news has been discussed variously while alternative terms such as misinformation, disinformation, fake information and rumor are often used to describe the concept. Fake news was popularized during the 2016 U.S. general elections (Sullivan, 2019) and has since been trending in world affairs especially in governance and journalism. Rose-Wiles (2018) notes that fake news is information that is deliberately faked with malicious or mercenary intent. Finley, McGowan, and Kluever (2017) define fake news as anything that has not undergone some traditional review process. According to a website definition, fake news is news, stories or hoaxes created to deliberately misinform or deceive readers (https://www.webwise.ie/teachers/what-is-fake-news/).

For the purpose of this paper, fake news is publication that is not based on actual scientific investigations; it includes unreliable facts which could mislead a researcher or information user in the learning and research process. Librarians are to promote the use of open access literature in order to forestall users' dependence on fake information. That is why the diagram below illustrates librarians' use of open access to scientific information as a weapon to fight against fake news.

Fig. 13. Open access to scientific information as a weapon against fake news

3 Literature review

Libraries have a long-standing record of promoting access to knowledge, so it can be adjudged that libraries are synonymous with open access. That is why OECD (2015) made a declaration that "libraries have adapted their role and are now active in the preservation, curation,

publication and dissemination of digital scientific materials, in the form of publications, data and other research-related content. Libraries and repositories constitute the physical infrastructure that allows scientists to share, use and reuse the outcome of their work, which have been essential in the creation of the Open Science movement" (OECD, 2015 https://www.fosteropenscience.eu/node/1431)

On the part of librarians, they have embraced the open access movement because it will help improve the quality of research. Therefore, their role in using open access to fight against fake news cannot be relegated. Rose-Wiles (2018) opine that librarians go extra miles in consulting and investigating vital information resources online, scientific database search, reference sources, etc. Lwoga & Quetier (2015) reveals that the majority of the librarians strongly support promoting OA issues on campus. One of the ways to achieve this is that academic librarians teach and refer library patrons to various types of OA resources while responding to patrons requests (Kassahun and Nsala (2015). Zhao (2014) also includes that librarians are managing digital library projects, digital archiving, institutional repositories, publishing open access journal, providing metadata harvesting services, creating web portals etc. with a view to promote free access to reliable and verifiable scientific information. Alam (2014) also identify various roles librarians have played in the open access movement. According to the author, librarians signed open access initiatives and petitions, have provided faculty with information on open access, have collaborated with faculty in setting up open access repositories to deposit their research publications, have also provided assistance in research data curation and sharing.

Moreso, challenges faced by librarians in using open access resources are briefly discussed. For instance, Kassahun and Nsala (2015) discover that some librarians who were aware of the Open Access were not actively using the resources to support users during the reference service. Also the authors found that lack of knowledge among the academic community, lack of faculty participation and quality issue of Open Access resources were challenges faced by librarians. In another study, Lwoga & Quetier (2015) observe that inadequate level of OA awareness may be contributory to low level of librarians' engagement with Open access activities. Also, Ugwuanyi and Ugwuanyi (2013) discover that most of the librarians did not understand the concept of Open Access. In contributing to this discourse, Uzuegbu and McAlbert (2012) add that low Internet bandwidth availability in the subSaharan African region poses an obstacle to easy access to free online journals. While buttressing the challenges of low bandwidth, Christian (2008) relates the high cost of Internet bandwidth in developing countries like Nigeria to the difficulties academic institutions in the region face in affording adequate bandwidth to host digital content.

Several factors have been identified as impediments to librarians laudable pursuit of the open access initiative. Whereas these roles were aimed at promoting access to information, there was no study known to the researchers who ascertained if librarians used open access to scientific information as a weapon to fight fake news. The present study attempts to fill this gap.

4 Methodology

The study employed a descriptive survey design using questionnaire as data collection instrument. The questionnaire was physically handed to respondents by the researchers in the two Nigerian university libraries under study namely: Federal University of Agriculture Abeokuta (FUNAAB) and Federal University of Technology Owerri (FUTO). Population for the study comprised of 53 academic librarians whose responses were found valid for the study. Rational for choosing academic librarians is because many studies reveal that academic librarians were more exposed to the open access initiatives. The questionnaire was structured by the researchers based on literature reviewed and anecdotal evidence. The 70 item questionnaire was made up of four sections. Items in the first two sections were dichotomous in nature while

items in the last two sections were based on a four-point Likert scale. Percentages and statistical means were employed to analyze the questionnaire. In order to determine the mean based on responses in the Likert scale, the following criteria were employed: Strongly Agree =4; Agree =3; Disagree =2; Strongly Disagree =1. Hence, the values, 4+3+2+1 equals 10. Therefore 10 divided by 4 = 2.5. So, in the decision column, statements with mean ranging from 2.5 and above were accepted while statements below 2.5 were rejected.

5 Results

Table 1. Return rate of questionnaire

S/N	ITEM	Frequency	%
1.	FUNAAB	25	47%
2.	FUTO	28	53%
	Total	53	100%

A total number of 53 questionnaires were retrieved from and found usable for the study. Out of this number 25 (47%) responses were from the Federal University of Agriculture Abeokuta while 28 (53%) responses were from the Federal University of Technology Owerri Nigeria.

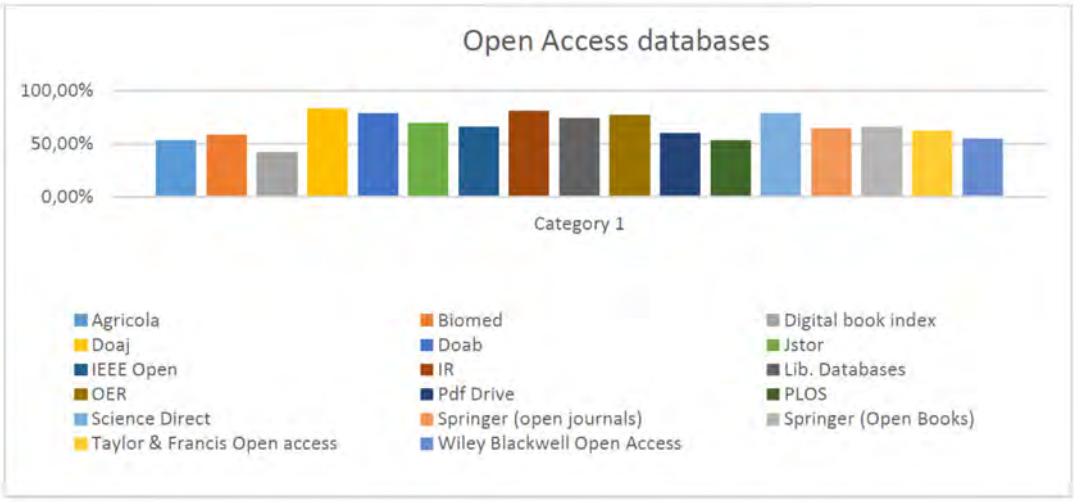

Fig. 2. Open access journals/databases known to librarians in the two Nigerian University Libraries.

Figure 2 reveals some Open Access databases known to librarians in the two federal universities. From the list provided, DOAJ - Directory of Open Access Journals (83%) is the most common database, followed by Institutional Repositories (81%), DOAB- Directory of Open Access Books and Science Direct (79%), Library in house databases (74%), JSTOR (70%). Other databases known to librarians include IEE Open and Springer (Open Books) (66%), Springer (Open Journals) (64%), Taylor & Francis (62%), Pdf Drive (60%). Further analysis showed that other Open access databases that were listed in the questionnaire such as Library genesis, AGRIS, PubAg and Agriknowledge were not commonly known among librarians in the two selected universities.

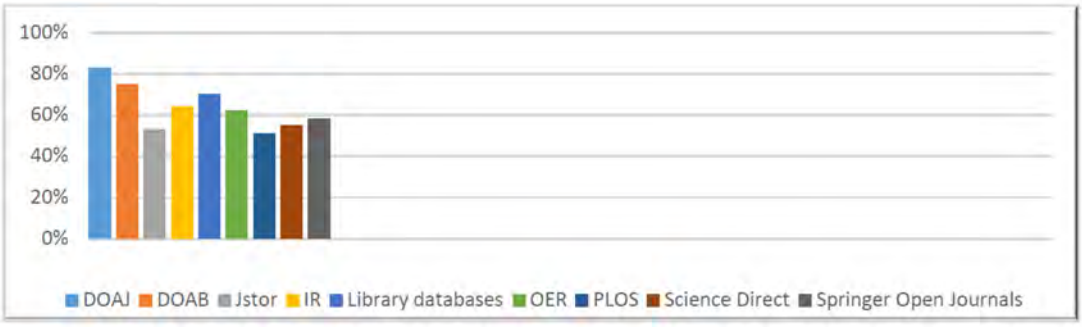

Fig. 3. Open access journals/databases used by librarians to provide scientific information

Analysis from the above reveal that DOAJ-Directory of Open Access Journals (83%) is the most common database used by librarians in the selected universities to provide scientific information. This was followed by DOAB-Directory of Open Access Books (75%), library databases (70%), IR - Institutional Repositories (64%), OER-Open Educational Resources (62%), Springer Open Journals (58%), ScienceDirect (55%), JSTOR (53%) and PLOS- Public Library of Science (51%). Findings from the study reveal that though librarians are aware of several OA databases, they do not use most of them in providing scientific information.

Table 2. Librarians role in the use of open access journal/databases to fight fake news N = 53

S/N	ITEM	Mean	Decision
1	Providing information literacy skills on use of Open Access journals	3.17	Accepted
2	Including records for OA journals in the catalogues/e-journals lists	3.04	Accepted
3	Updating faculty on OA journals through embedded library services	3.21	Accepted
4	Collaborating with faculty to develop Institutional Repositories	3.34	Accepted
5	Encouraging faculty to deposit their work on the IR platform	3.28	Accepted
6	Digitizing historical collections and providing Open Access	3.00	Accepted
7	Encouraging faculty to become active OA journal publishers	2.92	Accepted
8	Encouraging visibility of lecturer's work on OA sites eg Researchgate and Academia.edu	3.19	Accepted
9	Supporting faculty to become active OA journal publishers	3.00	Accepted
10	Creating Open Educational Resources for use	3.09	Accepted
11	Providing support in research data curation and sharing.	3.13	Accepted
12	Helping to share open access journals/ books to faculty and users	3.17	Accepted
13	Promoting advocacy for open access	3.13	Accepted
14	Consulting and investigating vital OA information resources	3.04	Accepted
15	Providing conducive environment/atmosphere for the use of AO resources	2.92	Accepted
16.	Creating awareness on the need for Open Access	3.28	Accepted

From the table, all the listed items were accepted since the Mean score was above 2.5. This provides evidence that the librarians in the selected university libraries use open access to scientific information as a weapon to fight against fake news.

Table 3. Challenges faced by librarians in using open access/databases to fight fake news

S/N	ITEM	Mean	Decision
1	Users are not aware of the OA databases provided by the library	2.94	Accepted
2	Users depend on their phones more than the library OA databases	3.11	Accepted
3.	Some librarians are not aware of Open Access databases	2.94	Accepted
4	Users prefer consulting readymade projects than using OA databases	2.98	Accepted
5	Poor Internet in the library hinders effective use of OA databases	2.77	Accepted

6	Some OA databases do not have current publications	2.66	Accepted
7	Some OA databases show error gateway and cannot be accessed	2.96	Accepted
8	Irregular/erratic power supply in my library challenges access to OA databases	3.00	Accepted
9	Inadequate computers hinder use of the Open Access (OA) databases	2.91	Accepted
10	Inadequate funding to sustain Internet for use of OA databases	2.81	Accepted
11	Insufficient library space discourages adequate use of OA databases	2.77	Accepted
12	OA databases are believed to contain poor quality research	2.38	Rejected

The table reveals the various challenges librarians in the selected federal universities faced in using Open Access to scientific information to fight against fake news. However, librarians did not accept that Open Access databases contain poor quality research. Hence, item number 12 was rejected.

6 Discussion

The study revealed that a good number of librarians in the selected federal university libraries claimed they were conversant with several open access databases. However, few of the Open Access databases were utilized by the librarians in providing scientific information. This could be attributed to librarians not actually being aware of the Open Access databases they claimed in the study. This finding corroborates the study by, Lwoga & Quetier (2015) who observe that inadequate level of OA awareness may be contributory to low level of librarians engagement with Open access activities. Also, the finding tallies with that of Kasahun and Nsala (2015) who discovered that some librarians who were aware of the Open Access were not actively using the resources to support users during the reference service.

Several factors were highlighted as challenges to librarians' use of Open Access to scientific information as a weapon against fake news. Some of these factors are in line with previous studies such as Uzuegbu and McAlbert, 2012 and Christian (2008) who identified low Internet bandwidth and high cost of Internet as challenges to Open Access. More so, a good number of librarians indicated that users' dependence on their mobile phones were a major challenge to use of Open Access to fight fake news. Another striking challenge from the study is that users and even some librarians are not aware of the Open Access databases provided by the library. This revelation is in line with Kasahun and Nsala (2015) who also found that lack of knowledge among the academic community, lack of faculty participation and quality issue of Open Access resources were challenges faced by librarians.

7 Conclusion

The findings of this study has implications on university libraries in that user decline will continually be on the rise where libraries and librarians fail to create awareness and promote the use of Open Access databases. However, the study places a demand on librarians to gear for the fight against fake news by radically promoting Open Access databases. This will greatly curb user dependence on unreliable sources while increasing access to scientific information and equally promote quality research. From the revelations of this study, librarians can strongly fight fake news where they are grounded with the use of open access databases and are available to assist researchers navigate the electronic landscape to access scientific information.

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Public Libraries as Discursive Spaces: A Review of the 'Discussion' Concept in Public Sphere Literature

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Abstract. The concept of 'discussion' is an essential component of the public sphere, but it is unclear how public libraries fulfill this discursive function. The purpose of this research is to elucidate how public libraries act as places for public sphere discussion. To accomplish this purpose, literature related to the public sphere and public libraries was reviewed. The review analyzed the 119 works that were identified by Widdersheim & Koizumi (2019). From these, literature related to "public library as a discussion place" was extracted. This was done by careful reading and by searching for the keywords. A total of 54 works was extracted that focus on public libraries and discussion. Core discussion functions of public libraries were then categorized by taking precise notes. Finally, we determined that five core elements of public libraries as discursive sphere in the democratic society: (1) openness and inclusion of various citizens, (2) discussion space, (3) information provision, (4) citizen education, and (5) public discussions.

***Keywords*:** Public Libraries, Public Sphere, Democracy, Civil Society, Discussion, Common Concern, Openness

1 Research Background

Globalization has changed cross-border flows across the world. The number of international migrants is estimated to be 271.64 million worldwide in 2019, an increase from the estimated 173.5 million in 2000 ("International Migrant Stock 2019" n.d.). This international migration has emerged as an important political and policy issue in recent years, which includes challenges related to integration, evacuation, safe migration, and border management (International Organization for Migration n.d.). In addition, the rapid progress of digitalization has enabled communication that is not limited to time and distance. But new digital technologies are disadvantageous for the elderly and immigrants because they require advanced skills and infrastructure to acquire information. There are also problems such as the digital divide, as well as the prevalence of fake news. Paradoxically, it has become difficult for citizens to gather reliable information. As social issues are becoming increasingly diverse and complex, there is a need for a comprehensive discussion of these issues. As a result, the role of public libraries as public sphere institutions has attracted attention.

This role is reflected in the Public Library Act in Nordic countries. The Norwegian and Swedish library laws were revised in 2013 with a focus on meeting places and public discussions in the democratic society. These revisions indicate that discussions are being promoted in public libraries.

The public sphere is a concept developed by Habermas. In his early work, Habermas (1962) described the rise and fall of the public sphere in Europe through the 17th, 18th, 19th, and 20th centuries. In the 18th and 19th centuries, the bourgeoisie used physical meeting places in locations such as coffee houses, salons, and table societies to discuss issues in society and

politics (Habermas, 1994). The political publicity formed in these sites--the public sphere--countered and monitored public government power. In an ideal public sphere, it discussions are based on common interests and they form a “public opinion” from an equal standpoint. The three necessary conditions of the public sphere are discussion, openness, and common interest.

Public libraries are considered to be one of the modern institutions where an ideal public sphere still emerges. Many researchers have tried to elucidate the relationship between public spheres and public libraries from various directions. Public sphere aspects of public libraries include their role as meeting places and their activities related to social inclusion, immigration integration, and material organization.

Several literature reviews have been recently conducted in this research area. Stilwell (2006, 2018) discussed the usefulness of the concept of social exclusion for the situation of public libraries in South Africa and the role and problems of public libraries in promoting democracy through information access. Alstad & Curry (2003) pointed out the unnaturalness of the public space for commercialization. They discussed the library as a true public space expressing opinions on political and social issues. Widdersheim & Koizumi (2016) and Vårheim et al. (2019) conducted systematic reviews of literature on public spheres and public libraries. The latest review is a comprehensive content analysis by Audunson et al. (2019). This review established four perspectives on the transition of public library and public sphere research: “social inclusion,” “library as a place,” “freedom of censorship and information access,” and “library and social media.” In these studies, “discussion” is mentioned frequently, but there is no detailed analysis about what “discussion” means. This is surprising given how “discussion” is a necessary condition in the public sphere and should be examined centrally. Further research is needed to clarify the meaning of “discussion” and how public libraries facilitate discussion.

The purpose of this research is to elucidate how public libraries act as places for public sphere discussion. This study asks 1) what are the general thoughts about the library as a discussion space, 2) what kinds of theories and concepts are utilised in articles regarding discussion places in public libraries, and 3) what kinds of cases have been used to describe public libraries as discussion spaces?

2 Research Methods

2.1 Literature

This paper analyzed N=119 works cited by Widdersheim & Koizumi (2019) that are related to the public sphere and public libraries. This list fully covers articles and books in the research field of the public sphere and public libraries. Among the N=119 works, this study focused only on those works related to “libraries as discussion places.” To identify these works within the larger set, researchers first searched for 11 keywords in the titles, abstracts and texts of the works. The keywords used were “debate (s)”, “discussion (s)”, “place (s)”, “arena (s)”, “public discourse (s)”, “democracy”, “civic”, “democratic, "Space (s)", "forum (s)", and "public opinion (s)" by using Thesaurus of Oxford English Dictionaries. Within the retrieved works, researchers then carefully read the works to evaluate their relevance to “libraries as discussion places.” In the end, N=54 relevant documents were identified.

2.2 Procedure of Analysis

The analysis of the works followed a 2-step process. Firstly, the components of “discussion” in the library were identified. This was done by reading the works where “discussion”, “debate”, and “discourse” appeared in the text. Researchers then gathered sentences and paragraphs

directly related to “discussion”. Researchers created categories (e.g., meeting place, digital access, e-government, etc.) and assigned passages from the works to these categories. The number of categories was gradually reduced using subsumption. This resulted in the essential components of discussion found in the public library.

Finally, through discussion and by reading the articles, researchers made detailed groups of the literature and described the figure about the concept of “public libraries as discursive spaces”. It was here that cases were gathered from the literature in order to illustrate the components of discussion within the library.

3 Results

3.1 General analysis

This study reveals how the public libraries function as discursive spaces. “Public discourse”, “public space function”, “information provision function”, “citizen education function”, and “citizen” are five components that emerged from the literature.

3.2 Citizens

Citizens represent the first component of discussion in public libraries. Citizens are not only agents in a public sphere but also its central issues. Several types of people are of central concern within the public sphere at the public library. Public libraries tend to support vulnerable people, most notably the elderly, immigrants, ethnic minorities, homeless, drug addicts, and people who identify as queer. Immigrants and ethnic minorities especially face challenges in terms of their information gathering and communication within their local societies. Libraries are able to make all people involved in political, social and cultural discussions. Social inclusion relates to how citizens who are vulnerable are still represented and included within a public space. Among the requirements of the public sphere is openness of all citizens to participation. The public library can be seen as a public space that accepts people with various backgrounds.

3.2.1 Immigrants

Nordic public libraries have focused on equal access to public libraries as public sphere institutions, which is strongly influenced by migration. Libraries are prioritized in society due to how immigrants are socially and politically integrated there. Immigrants, especially when they have just come to a foreign country, can relieve loneliness and ease feelings of isolation in public libraries. From their own experience in their own countries, they know that the public library is a trustworthy institution, and they finally trust and rely on the country they have migrated to. For example, Audunson et al. (2011) state:

The findings indicate, however, that using the library to cope with emotional distress and frustrations was important in the early stages of being an immigrant. The respondents went to the library first with their inner needs related to homesickness, feeling alone, etc. The library was also related to their role as mothers, and as an arena where they could live out their needs for social contact. (p.224)

Immigrants collected the important information for living in their local communities through library programs and information resources (Johnston 2016; Audunson, Essmat, & Aabø, 2011; Vårheim, 2011). Johnston (2016) also illustrates that library programs help immigrants’ social activities and join the local community.

3.2.2 Minority populations

Hansson (2011) focuses on five minority populations that the Swedish government provides special protections to and analyzed activities and attitude of Swedish public libraries for immigrants. This research concludes that Swedish public libraries have an extraordinary limited activity towards these national minorities. This goes for collection development, outreach activities, and cooperation alike. (p. 412)

3.2.3 Homeless and drug addict

Aabø & Audunson (2012) point out that public libraries are open to all citizens and more successful and well-adapted middle-class users are exposed to marginalized groups, such as drug addicts and homeless. The authors observed a homeless person in the multicultural library, who was sitting in one of the sitting areas, whose feet on the table, smelling badly. Although no one would sit at the same table, he was accepted. They concluded that the library is a very tolerant place. (p. 147)

Alstad & Curry (2003) argue that discrimination can be covert or unintended but examples abound, especially with regard to the homeless. Some public libraries are effectively limiting access to homeless people by restricting the size of belongings patrons bring in (Seattle, Tacoma), or by prohibiting people with body odor because they are a "nuisance to patrons." (Broward County, FL). These are understandable concerns, but the library should attempt to work with other agencies so that, for example, homeless people have a safe place to leave their belongings. Also, library policy should not redefine "patron" to exclude homeless people; this is the same as the merchants of Boulder redefining the "public" to exclude a group that made them uncomfortable. Homeless people are patrons, and the public library is one of the few places to which they have rights of access. Staff and board member training may be required to ensure equitable access in practice and policy. (p. 1)

3.2.4 LGBQT

Library services to LGBQT have been encouraged as a place where you can meet library collections by keeping your identity anonymous. However, it has recently proposed that the library offer a space for coming out and sharing their thoughts (Rothbauer, 2007).

For example, the expressed fear regarding unintentional disclosure of one's sexual orientation may be more broadly interpreted than solely as a need for a safe, private place in which to read and browse materials containing LGBQ content. The participants in my dissertation study suggest that safe, public spaces might function just as well by allowing them to "come out" in a space that gives access to much sought after representations of a range on non-mainstream sexualities and that offers protection by actively censuring anti-homosexual and homophobic activities within its walls. (p. 110)

3.3 Library functions as a discussion space

Discussion space is the second component of discussion in public libraries. Public libraries are able to support all citizens who have diverse backgrounds, such as interests about local issues, anxiety about language skills, and looking for some safe place. We identified the library functions which are "public space", "information provision" and "citizen education".

3.3.1 Public spaces

Public spaces in public libraries provide citizens with a safe and open neutral space, contributing to citizen participation and community strengthening. There are 4 aspects of the public space in public libraries: openness and exposure, citizen participation, community building, and social capital.

3.3.2 Openness and Exposure

Aabø & Audunson (2012) emphasize that "the library facilities are open and accessible to all, and people from different strata of the population in the local communities and in very different circumstances of life use the library" (p. 147). However, public libraries can also contribute to hide people's background. Both sides of public libraries are essential. Aabø & Audunson (2012) describe this trait of public libraries:

On the other hand, the library is a place where the marginalized can conceal their marginalized situations, and be equal with others in a room of normality. Of two people sitting opposite each other using the computers in the gentrified library, one was a successful young woman about to publish her first book, the other was a man long unemployed. His status as less successful, compared to the woman, was not apparent. He was a library user among other library users, in the same way as she was, not standing out as different in any respect. (p. 147)

3.3.3 Citizen Participation

Public libraries provide opportunities to discuss in the community for citizens (Braman, 2009; Schull, 2004). Due to this, public libraries actively created such a space by renovating their buildings and making some events and programs (Schull, 2004; Pape & Smirnova, 2018; Kranich, 2010). For instance, Schull (2004) illustrates a case in Virginia Beach as below:

> *Immediately inside the front door is an area designed to encourage the sharing of community information and the exchange of viewpoints; chairs are arranged so as to promote social interaction and discussion. A spacious meeting room will become a chosen location for public dialogue about issues of importance to the surrounding neighborhoods. (p. 69)*

In addition to this, Pape & Smirnova (2018) describe renovated libraries in Moscow. They state "In the architectural reconstruction, the team placed emphasis on creating a modern and open design that is inviting for the library user" (p. 787). For specific space design, they describe "Adjustments in the interior design, such as the removal of the bars that used to block the windows of Dostoevsky Library and the establishment of a clear connection between the library's interior and the outside space of the city, underlined the aspiration of the reform project to open up the library space" (p. 788) and "In both Dostoevsky and Prospekt Libraries, larger meeting rooms were set up for organizing public events such as lectures, language classes, workshops or public debates" (p. 788).

3.3.4 Community Building

Public libraries are able to assist community building in the local society and unite isolated communities. Audunson (2005a) discusses that public libraries are places for making divided groups communicate

The local public library is an institution firmly embedded in the local community with links to practically speaking all sectors of activity in the community. Using the local library, therefore, is in itself a form of participation in the community with links and channels to a broad spectrum of arenas and activities. Via the public libraries, newcomers and excluded can be offered exactly that gradual introduction to the local community that the strategy of legitimate peripheral participation recommends. (p. 432)

Also, Wiegand (2003) illustrates that Book clubs have some effect of community building based on Long (2003)'s discussion.

3.3.5Social Capital

Research on the social capital and public libraries are explained by building the trust of the public libraries with the relationship with citizens network (Vårheim, 2009, 2011; Audunson et al., 2007). For instance, Vårheim (2011) points out the trust between immigrants and public libraries:

Libraries are thought of as building trust through their institutionalized universalistic policies. Even if immigrants are very distrusting of government institutions, it is probable that public libraries are among the least distrusted and therefore has a comparative advantage in creating trust. At the same time, libraries offer useful skills in the form of English literacy, computer skills, and civics skills, for free, and in a flexible manner. Also the elaborate designs of the library programs studied indicate that the success rate could be high. (pp. 17-18)

3.4 Information Provision

Information provision is the third component of discussion in public libraries. Public libraries provide reliable collections and information through their services. This research illustrates what kind of information the library provides and how it affects perceptions of citizens and politicians. The library's information provision function is related to openness in terms of the free principle, and the information provided was related to the public sphere in the form of reinforcing discussions and creating public interests.

In the literature, the general idea is that libraries provide political information, which leads to democracy. This is closely related to discussing political and social concerns in the public sphere. Attention has also been focused on information provided digitally.

3.4.1 Political Documents

Providing information in public libraries plays a critical role in the socialization of local communities and has important aspects of daily life and popular culture (Braman, 2009).

Among the various media provided by public libraries, there is frequent discussions in literature about providing information from the government to citizens through e-government (Jaeger et al., 2014; Johansson, 2004; Kranich, 2010). The advantage of e-government is that it enables faster, easier and cheaper communication (Johansson, 2004). On the other hand, issues such as the vulnerability of collection and storage of digital divide and national archives have been pointed out, and a role as an intermediary of library information is required for resolution (Jaeger et al., 2014; Johansson, 2004; Braman, 2009).

3.4.2 Digital and electronic resources

By digitizing local documents, public libraries have contributed to citizens (Kranich, 2005). She explains that “Thanks to new technologies, libraries now deliver numerous local databases and websites to citizens eager to find and use vital services within their communities. Citizens can look at meeting agendas and actions of local boards and commissions, seek social services, and identify emergency contacts” (p. 96)

3.4.3 Multilingual collections

Audunson et al. (2011) emphasizes the importance of multilingual collections. Public libraries have collected collections written in many languages in addition to their mother tongue:

> *One aspect of the library's role as a bridge to the country and culture of origin was the provision of services — books, newspapers, and movies — in the immigrants' own languages. The primary reason for including such documents was, from the library's side, to provide the immigrants with opportunities to stay in touch with their culture of origin. (p. 226)*

3.4.4 Perceptions of Politicians and Public Officers

Politicians and public officers recognize the importance of public libraries in a democratic society and think that they should promote public library policies in the future (Audunson, 2005b; Evjen, 2015):

> *To elicit data on how the informants prioritize the library's role and function, they were asked to name the most important reason for having a public library service. In all three cases, the library as a place for knowledge and learning featured most often. (p. 10)*

3.5 Citizen Education

Citizen education is the fourth component of discussion in public libraries. Citizen education in public libraries is critical for developing language literacy, discussion literacy, and information literacy.

3.5.1 Debate Literacy

Public libraries function as a public forum, when they create public programs that encourage citizens to participate in local communities (Kranich, 2005, 2010). For instance, Kranich (2010) illustrated cases as below:

> *In Virginia Beach, the one hundred citizens that worked with librarians to collect and assess community concerns about redevelopment learned together about civic action and participated in democratic discourse for the first time. [...] A critical mass of libraries must seize this civic engagement role and offer citizens across the spectrum of class, race, ethnicity, gender, and sexual orientation ample opportunity to engage in Barber's strong democracy. (p. 21)*

3.5.2 Languages Literacy

Programs for learning languages, e.g., language cafes, help for incorporating immigrants into political discourse in the country. Johnston (2016) illustrated that "Language learning is the primary focus of the program and, indeed, 23 of the 24 questionnaire respondents agreed or strongly agreed that their language skills had improved through attending the program" (p.13).

3.6 Librarian Profession - Perceptions and Skills

Librarians are the fifth component of discussion in public libraries. Librarians are very important for building collections and for creating programs and events. The public sphere is reliant on them. This section describes perceptions and skills of librarians.

3.6.1 Librarians' Perceptions

Audunson & Evjen (2017), surveyed librarians in 2013 regarding their perceptions about the revision of Norwegian Library Act. The results explain that librarians are very interested in creating public-sphere-related events:

> *When asked about which kind of services and activities, they will give priority to when implementing and adapting to the new mission statement, arranging meetings and events is ranked first, and skills related to planning and arranging events are ranked as the most important skills for librarians to develop. This suggests that a portion of the respondents believe democracy and the free formation of opinion are best promoted by organizing meetings, and that this is how libraries can help their communities to meet major challenges. (p. 13)*

3.6.2 Librarian's Skills

Public librarians are required for skills of developing programs and promoting access to the collections and information resources, when they have a public debate in public libraries (Kranich, 2005; Schull, 2004). For instance, Schull illustrated a program "Many Voices, Many Lives" (MVML) on the theme of AIDS in order to illustrate librarians' perceptions and skills about programs:

> *The[the] library works with the collaborating agencies to select the main book for the community discussions, create lists of films and books, and prepare promotional materials. Through small group discussions held throughout the city, related activities such as film showings and performance workshops, and a final performance and community event celebrating World AIDS Day, the program unites the city in a discussion of a key public issue affecting the lives of many young people and their families. (pp. 77-78)*

But, despite the importance of librarians' abilities for enhancing democratic society, there is criticism that there is no inclusion of these skills in the library education curriculum (Schull, 2004).

3.6.3 The Value of Librarians

Widdersheim (2015) offers a model of the public sphere and public library that identifies its three dimensions. The model emphasizes the value of librarians in the public sphere. The author explained that "Repositioning public libraries as public sphere stewards is a helpful way to articulate the value of public librarianship and to uncover what practicing librarians know but can't explain the larger social and political impact of what they do" (p. 242).

3.7 Public Discussion

Public discussion is the sixth component of discussion in public libraries. Public discussion includes common concerns and topics in the events and collections curated by public libraries in response to their local communities.

3.7.1 Library programs regarding common concerns

The content of discussions is an important issue affecting the entire population. The interests of the arguments identified from the literature are as follows: political interests include the role of the United States in the world (Schull, 2004), racial and ethnic tensions, the relationship between the United States and Russia (Kranich, 2005), democracy, and immigration (Kranich, 2010).

Other society and national-level topics were found in the literature: traffic, AIDS experience and support, teen pregnancy, race relations in America, and energy (Schull, 2004; Kranich, 2010).

Finally, local level interests include economic development, education for children in Kansas, for adults who want to retire and contribute to the community, the history of the Flint region, care and development of families with young children suitable learning resources (Schull, 2004), employment (resume support, job etiquette, etc.)(Johnston, 2016), Swedish learning opportunities (Johnston, 2016), environmental quality issues (Kranich, 2005), local concerns, and healthcare (Kranich, 2010).

3.7.2 Information Provision of Local or Personal Interest

The public also library provides local information and information that is for individual, private, and personal use. The interests identified from providing information on books and websites are as follows: First, one political interest was that women obtained books on Islam to participate in workplace discussions (Aabø & Audunson, 2012):

On this occasion, one of the women went to the religion and philosophy section and came back with a book on Islam, one of the most controversial issues in public discussions in Norway at the moment. She said that this issue was much discussed at her workplace, and she wanted to be a better-informed participant in those discussions. (p. 144)

The information the library provided on the website focused on local interests. Examples are the agendas of local board and committee meetings, job information sites (Kranich, 2005), and a local public diary (Johansson, 2004). One example is an agenda and job information site for local board and committee meetings (Kranich, 2005).

3.7.3 Common Concerns on the Web Forum

Finally, a public discussion forum that is archived by a public library incorporates common concerns. The forum included local interests, such as politics and budgets for childcare and elementary school (Johansson, 2004) and suggestions for ideas on youth activities (Johansson, 2004).

4 Conclusion

Returning to our central research question, we determined that five core elements of public libraries as discursive sphere in the democratic society: (1) openness and inclusion of various citizens, (2) discussion space, (3) information provision, (4) citizen education, and (5) public discussions. Within the citizens as a discursive issue function, libraries emphasize citizens, especially vulnerable populations, as issues of common concern. In the public space function, public libraries provide a safe and open space for social events where diverse people interact. In the information provision function, public libraries provide reliable information, including e-government services. In the civic education function, public libraries educate citizens about discussion through language learning and literacy events. Finally, in the public debate function, public interests and topics are raised by the library through its events and collections. These findings establish a strong connection between the public sphere and public libraries, and they clarify several discursive functions of public libraries.

Public librarian's professions and skills are closely related to the library functions, especially creating programs and events that reflect citizens' needs and interests. Librarians are both actors and facilitators of public sphere discussion in public libraries. Some of the public discussion programming identified in this study included public health issues, employment and job-seeking, and social issues. Citizens are able to participate in person or virtually on the Web.

The public library is positioned as an important institution for socially and politically integrating migrants against the backdrop of the global migrations. The library space used by diverse people for overcoming loneliness and isolation. Libraries also provide information in various languages. These are used to get home country news and increase confidence in immigrant libraries. In addition, libraries offer language literacy programs such as language cafes and conversation circles for immigrants with insufficient language. These programs not only provide language skills to immigrants, but also provide information about the region and profession from librarians and volunteers, and allow participants to discuss education.

From the above, this paper has established a strong relationship between the public sphere and public libraries, and has clarified some of the debate functions of public libraries. However, as already pointed out by Widdersheim & Koizumi (2016), these library functions have not been fully demonstrated. In the future, we plan to conduct research to demonstrate the functions revealed in this paper.

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Recognizing and Labelling Fake News: Student Perspective

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Abstract. As more and more people not only have Internet access, but are spending a fair amount of their time online, it is important to possess skills and knowledge to recognize misleading and inaccurate information resources. Individuals are constantly engaging with all kinds of information online, especially the student population whether for study, research or for fun. Since they are the future academic citizens, a question is popping up whether they can recognize not only disinformation but what type of disinformation they are facing regardless of their field of study. Whether they are studying to be a doctor, architect, historian or literature professor, the same rule should apply for everyone - to know how to spot fake news and false information as in this age of information society it is imperative to gain such skills while engaging with online content. For the purpose of this research, an infographic made by the EAVI European Association for Viewers' Interests will be used as they created a smart and effective way of recognizing different types of fake news to the public (the infographic was based on Steinberg's 10 categories of fake news). Data analysis and a questionnaire are being conducted among the student population of the University of Josip Juraj Strossmayer in Osijek, Croatia. Different examples are being given to students where they have to recognize whether they've been given a fake news article, they have to decide what type of fake news they are facing, what kind of impact the false information can have on society if misinterpreted as true, and they will have to give their opinion on what they think is behind the motivation of each given example of fake news. The purpose of this research is to determine to what extent students in the city of Osijek are implementing their knowledge about fake news in digital environment, can they and how well they can identify false resources? Data was gathered with the help of quantitative methodology. There was no similar study of this type conducted in the city of Osijek before, therefore authors of this research believe that this paper will with its originality contribute directly to the importance of this topic in academia and send a clearer picture if there should be more courses on this subject integrated in the curricula on a university level. This study can either serve as an example of good practice or as a suggestion and notice that university program should be more involved and active in the field of information literacy and resources.

***Keywords*:** fake news; digital society; student population; University of Josip Juraj Strossmayer in Osijek; information literacy

1 A Brief History of Fake News

"Fake news" is an expression which nowadays we use more than ever before, especially with the rise of social media. However, its roots go deep into the history of the Roman Empire. One of the first considered fake news is so-called misinformation which Roman politician Octavian spread among the Empire, accusing his rival, General Mark Anthony, of indulging into alcoholism and promiscuity.[1] On the other hand, some of the research believe that fake news appeared with the press. With that in consideration, one of the first examples of fake news appeared in the New York Sun daily newspaper. The British astronomer John Herschel was, in 1835, making observations in South Africa by using a telescope directed at the Moon and several stories about

[1] Karčić, H., & Ćidić, I. (2018). Fake News, Social Networks And Internet Bots. Retrieved from https://www.ceeol.com/search/article-detail?id=747790

the fantastic images observed on the Moon were shown in the New York Sun newspapers. The stories and images were, in fact, a practical joke. In the late 20th century, by switching to an online environment, the role of the editor or the one who chooses and compiles the news is fading, meaning anyone can create and publish information online. Consequently, many people who are looking for the news, unfortunately, end up consuming fake news. One of the most famous example is probably the made-up story that goes under the title "Pope Francis Shocks World, Endorses Trump for President" during the 2016 Presidential election. This story received 960 000 "engagements" on Facebook. Such fake news ought to have some serious consequences. One of the recent research shows that fake news actually had an impact on the mentioned election and that there are some serious concerns about the potential impact they may have on future elections.

2 Definitions of fake news

"Fake news" is an expression that became politicized and popularized in 2016 during the U.S. elections.[2] Collins English Dictionary even chose it as „Word of the Year 2017", for it becoming extremely used in everyday vocabulary. Collins Dictionary states that the term „fake news" came into use in the first decade of the 21st century on American TV stations to describe false, often sensationalist information that is being spread through newspaper reports. Fake news is used as definition for all news that are false whether it is fictional news, intentional false information or a fictive source. Further on, false information, in an intentional and manipulative way, is being sent to a specific group of people for them to consume.[3] However, it is believed that this definition is, in fact, too broad. The reason behind that is because it incorrectly counts honest mistakes such as headlines and stories published in satirical news sources. These stories occasionally mislead people who do not get the joke. One of the possible definitions of fake news could also be "bullshit news".

Those who propose this definition have in mind Harry Frankfurt's idea: "it is just this lack of connection to a concern with truth—this indifference to how things really are—that [is] the essence of bullshit." The best example to understand this definition is probably the one with Macedonian teenagers, who posted many false stories about Hilary Clinton on the Internet in order to generate thousands of dollars a month in advertising revenue. However, the Macedonian teenagers did not care about whether they are conveying the truth, they published the stories that are most likely to generate the most clicks. Furthermore, another possible definition is "intentionally deceptive news". Here, what is definitive of fake news is that the purveyors intend people to acquire false beliefs from reading their stories. The suggestion here is that the purveyors of fake news are lying. Also, this definition, unlike the false news definition, excludes satire and honest mistakes, as there is no intention to deceive in these cases. "News that lack truthfulness" is another possible definition of fake news, which implies the deceptive nature of the news. What is definitive of fake news in this definition is that the purveyors do not intend people to acquire true beliefs from reading their stories. Lastly, another possible and preferred definition is "counterfeit news" which means that a story is fake news if it is not genuine news, but is presented as one, with the intention and propensity to deceive. Genuine news includes stories that have gone through standard modern journalistic process, meaning they have been produced by professionally trained reporters, editors and fact-checkers, who

[2] Quandt, T., Frischlich, L., & Boberg, S. (2019). Fake News. Retrieved from https://www.researchgate.net/publication/332749986_Fake_News

[3] Karčić, H., & Ćidić, I. (2018). Fake News, Social Networks And Internet Bots. Retrieved from https://www.ceeol.com/search/article-detail?id=747790

are attempting to provide fair and accurate accounts of current events. In addition, this definition excludes honest mistakes and satire.[4]

3 New generation and fake news

Today, the Internet is the main source of all information and one of the reasons why fake news have a bigger impact today than they had some decades before. In fact, Soroush Vosoughi, Deb Roy and Sinan Ara, professors at Massachusetts Institute of Technology, have conducted a research (2006-2017) in which they have found that, on social media, fake news are being spread extremely faster than the genuine news. In other words, fake news has 70% more chance to be shared on social media compared to the genuine news.[5] Another study, conducted by Regina Marchi, has revealed a new type of media consumer's behavior. It is believed that young people prefer alternative information, with explanation and interpretation, confirmed by friends, acquaintances who access them while they are working on the computer. Thus, misinformation that gets inside the collective mind is considered one of the most serious consequence of the fake news phenomena on the Internet.[6] For young people, to avoid fake news, it is necessary to consider the source of information as well as to take a closer look at the site and explore its purpose. Also, it is necessary to read the full text of an article, not only its sensational title. One of the most important factors is to check if an article has its author, if the author is real and to be trusted. Furthermore, it is necessary to click on additional links and references to check if they contain information that confirms what has been written as well as the date of publication. The easiest way to recognize fake news is to check different sources about the same topic. Fake news usually occur on less reliable websites and are written by an anonymous author. Furthermore, fake news stands out because of their sensational title which is the main reason they spread out quickly on social media. Every article on a website that does not contain an author is easily to be considered fake, but should nevertheless be double checked.[7]

When given a choice of media messages to peruse, people are usually likely to select information that fits pre-existing beliefs or values. Today, algorithms underlying online media outlets are designed to profile audiences based on their previous preferences and to deliver them similar information to the one they have already searched for. As new media technology enhances selective exposure tendencies, people encounter increasingly agreeable media, as well as more and more content from like-minded social contacts. If some news outlets are more willing to spread misinformation then, unfortunately, selective exposure can exacerbate false beliefs among people who select and rely almost entirely on those sources.[8]

4 Categorization of fake news

It is hard to spot fake news these days. We can find a lot of information on the Internet and it is necessary to determine makes news relevant. Different experts often categorize fake news into specific categories. Steinberg lists ten potential categories of fake news: clickbait, propaganda,

[4] Stavre, I., & Puntí, M. (2019) Fake News, Something New?. Sociology and Anthropology, 7 (5), 212-219. DOI:10.13189/sa.2019.070504

[5] Karčić, H., & Ćidić, I. (2018). Fake News, Social Networks And Internet Bots. Retrieved from https://www.ceeol.com/search/article-detail?id=747790

[6] Stavre, I., & Puntí, M. (2019) Fake News, Something New?. Sociology and Anthropology, 7 (5), 212-219. DOI:10.13189/sa.2019.070504

[7] Karčić, H., & Ćidić, I. (2018). Fake News, Social Networks And Internet Bots. Retrieved from https://www.ceeol.com/search/article-detail?id=747790

[8] Krause, N., & Wirz, C., & Scheufele, D., & Xenos, M. (2019). Fake News: A New Obsession with an Old Phenomenon?. Retrieved from 10.1093/oso/9780190900250.003.0005

sponsored content, satirical and misleading news, error, partisan, conspiracy theories, pseudoscience, misinformation and bogus.[9] Society needs to develop critical opinion towards information sources and ask ourselves questions like „Where did they found this information?“. The explanation behind Steinberg's categories are as follows: Clickbait is associated with articles on web portals and with every 'click' on the page, the company behind the web portal earns money. The headlines are generally very exaggerated, overstated, and intending to intrigue the reader enough to click on the page. However, a sensationalist title does not always deliver good enough content to satisfy the user. Next, the category of propaganda news is related to politics and advertising in the media. Its task is to influence the views and opinions as well as emotions of the reader. For the most part, such news is not objective. Propaganda news can be harmful, but it can also be beneficial because such news can have huge impact on the reader if news spread positive information that can have positive affect on reader's emotions. The third category cited by Steinberg is sponsored content. Sponsored news has little impact on the audience, but there can be a conflict between organizations. The next category is satirical and misleading news. Usually, readers can easily recognize that such news is fake because the content is extremely ironic and humorous. A reader who believes this news to be true may feel embarrassed because he/she has not recognized the humor and satire in the content. Furthermore, the error category implies fake news reports that were posted by mistake and subsequently deleted after.[10] News organizations generally apologize for the mistake they made public. The sixth category of fake news according to Steinberg is partisan. Such news is often ideological and most often associated with politics and power. Such news is biased and affect the views and emotions of the audience and the content described is passionately written. Next on, conspiracy theories category are news stories that try to explain the cause of a particular event and reveal the hidden truth to the audience. They often do not accept the opinions of experts and authorities. Very rarely does such news prove to be true. The headlines of this type of news may be "Evidence indicating that the earth is flat", etc. The following category is pseudoscience. It has a very strong influence on the reader and the main motivation is money and power. It falsely presents the results of a research, and only accepts the results that are relevant in order to confirm the thesis. The results are usually unrepeatable. Behind pseudoscience lie vague arguments and writing language to confuse the reader. The misinformation category also has a strong influence on the reader. It implies news that contains fake od partially fake news. It is possible that the author is not aware of the false content. It's a genuine mistake made by the author and the news organization that published the news. Unlike the misinformation category that inadvertently publishes fake news, in the bogus category the fake news is published on purpose and is intended to influence and misinform the reader. For the most part, such news is completely fabricated and the motivation is to make money.[11] Quandt T, Frischlich L, Boberg S, Schatto-Eckrodt T. (2019) consider that fake news can also be classified into three categories: news that is misleading but factually correct, then news where authors add false information to the true news or conceal certain information, and an absolute lie that is not based on any facts.[12]

[9] Steinberg, L. (2019). Infographic: Beyond Fake News – 10 Types of Misleading News – thirteen Languages. Retrieved from https://eavi.eu/beyond-fake-news-10-types-misleading-info/

[10] Silverman, C. (2014). The year in media errors and corrections 2014. Retrieved from https://www.poynter.org/newsletters/2014/the-year-in-media-errors-and-corrections-2014/

[11] Steinberg, L. (2019). Infographic: Beyond Fake News – 10 Types of Misleading News – thirteen Languages. Retrieved from https://eavi.eu/beyond-fake-news-10-types-misleading-info/

[12] Quandt T, Frischlich L, Boberg S, Schatto-Eckrodt T.(2019). "Fake News" University of Munster, Germany. Available from: https://www.researchgate.net/publication/332749986_Fake_News [Accessed Dec 12 2019]

5 A brief overview of similar research

Rasmus Kleis Nielsen and Lucas Graves conducted research trying to explore audience perspective on fake news.[13] The research has been proven as an analysis of audience perspectives on fake news based on a mix of data from the United States, Spain, the United Kingdom and Finland including data from 8 groups they focus on. Following an online survey results were obtained: people are aware of fake news on the Internet, but based on examples shown, they can partially identify fake news. Most often they identify propaganda, poor journalism and sponsored news as fake. They also realized from the data that people do not see a clear difference between fake and real news, so it is difficult for them to deduce what news is fake. They concluded people believe that the media, politicians and platforms that spread the news are most often responsible for the problem of fake news.[14] However, most people believe that some news media contain reliable information, but only a small number of sources have been judged reliable and credible by all participants. They noted that the participants are different and that it should not be generalized and therefore say that the results do not represent the population of the entire country.[15] El Rayess, Chebl, Mhanna and Hage conducted research on fake news judgment from students perspective. The survey was conducted between January 2015 and June 2016, on 7804 students in middle school and colleges. Forty-one percent of students in the survey were male and 59% were female. The study was conducted through 3 tasks. First, they were collecting personal information and information in which they wanted to find out from the participants their main news sources and whether the participants were checking the news after reading it. Then they wanted to find out if the candidates would recognize whether the pictures and articles were real or fake. Finally, they checked the authenticity of the information.[16] The results showed 53% of participants stated that the main source of news is Facebook. One of the findings was that students are fairly convinced that they can judge exactly what news is false and the faculty that the student attends has a lot of influence on the judgment. Also, the results show that students are generally unable to accurately judge what news is fake, and although 80% of the student stated that they check information before sharing it with friends, they cannot evaluate the credibility of that information.[17]

6 The background of the study and research Method

The purpose of the study was to answer two main research questions: To what extent do students recognize fake news and which fake news recognition mechanisms do they apply when confronted with a new source of information? The research was conducted via online

[13] Nielsen, RK., & Graves, L. (2017). „News you don't believe: Audience perspectives on fake news“. Reuters Institute for the Study of Journalism. Available from: https://reutersinstitute.politics.ox.ac.uk/our-research/news-you-dont-believe-audienceperspectives-fake-news [Accessed Nov 24 2019].

[14] Nielsen, RK., & Graves, L. (2017). „News you don't believe: Audience perspectives on fake news“. Reuters Institute for the Study of Journalism. Retrieved from https://reutersinstitute.politics.ox.ac.uk/our-research/news-you-dont-believe-audienceperspectives-fake-news

[15] Nielsen, RK., & Graves, L. (2017). „News you don't believe: Audience perspectives on fake news“. Reuters Institute for the Study of Journalism. Retrieved from https://reutersinstitute.politics.ox.ac.uk/our-research/news-you-dont-believe-audience-perspectives-fake-news

[16] Nielsen, RK., & Graves, L. (2017). „News you don't believe: Audience perspectives on fake news“. Reuters Institute for the Study of Journalism. Retrieved from https://reutersinstitute.politics.ox.ac.uk/our-research/news-you-dont-believe-audience-perspectives-fake-news

[17] El Rayess, M., Chebl, C., Mhanna, J. and Hage, R. (2018), "Fake news judgment: The case of undergraduate students at Notre Dame University-Louaize, Lebanon", Reference Services Review, Vol. 46 No. 1, pp. 146-149. Retrieved from https://doi.org/10.1108/RSR-07-2017-0027

questionnaire among the students of the Faculty of Social Sciences and Humanities at the University of Josip Juraj Strossmayer. Since the questionnaire was in an online form, the research had to be conducted in computer classrooms of which there were four at the Faculty. The total number of participants were 137 students, out of which 81% were female students, and 19% were male students. The age of the participants ranged from 18 years of age to 33 years of age, out of which the biggest age group was 20 years of age (18%). The participants were also asked to mark their current study field. Majority of the participants were students of Information Sciences (62%), followed by Psychology students (19%). Minority of the participants were from the following fields of study: History (1%), Sociology (7%), Hungarian language and literature (1%), English language and literature (2%), Philosophy (1%), Croatian language and literature (1%), German language and literature (1%), Other (5%) – meaning alumni students. A larger degree of participants were on their second year of undergraduate level (30%), and on their second year of graduate level (23%), followed by the third year of undergraduate level (23%), first year of undergraduate level (13%), first year of graduate level (6%) and other (5%) – meaning alumni students.

Considering fake news categories by Steinberg explained in the previous chapters, the research was designed in a form of articles which the participants had to read online and decide whether they are reliable sources of information or not. The articles included in the questionnaire were followed by questions about the article and its credibility. There were four articles included in the questionnaire and they are all real sources that exist in an online form. The articles were selected based on the category of fake news they belong to (according to Steinberg) and the level of popularity they caused in the online environment. Specifically, all four articles were recently published in the year 2018-2019 and shared via social networks as a credible source of information. The same articles have been the subject of a debate on social networks about whether or not they are fake news.

7 Research Findings

The first article about facial recognition on Facebook, produced by the 21stcenturywire.com website[18] was officially flagged as a conspiracy theory website which is one of the fake news categories according to EAVI and Steinberg. The 21stcenturywire article is also marked as a source of unverified information that is not supported by any evidence. It can also be categorized as clickbait and misinformation. This category of fake news as well as the article consists of information that may be unreliable, so it is recommended that the reader verifies the facts, the credibility of the site itself, and conducts further research into the credibility of the content that was written. The first question asked for all four articles was for the participants to decide whether they think the read content is a reliable source or not. Out of four available options, the percentage of given answers are as follows: "*Yes" - the participants think this is a reliable source of information* (17%), "*No" - the participant doesn't think this is a reliable source of information* (23%), "*I'm not sure" - the participant is not sure whether the article is a reliable source of information* (40%), but won't conduct any further research about the source, "*I need more information about the article to decide whether it is reliable or not"* (20%). Considering the nature of online media and fake news, the most correct answer in all four cases (articles) would be *I need more information about the article to decide whether it is reliable or not*, as nowadays it is impossible to mark a source of information as reliable according to one source the participant is reading. The second question asked in the questionnaire was open-ended where

[18] 21 Century Wire. (2019). Biometric Fight: Facebook Defeated on Facial Recognition, But Google, Amazon Still Pushing Ahead. Retrieved from https://21stcenturywire.com/2019/09/07/biometric-fight-facebook-defeated-on-facialrecognition-but-google-amazon-still-pushing-ahead/

the participants had to explain why they chose a certain option. Since this question was open-ended, the answers were categorized in order to get a clearer answer representation.

For the first article, the categorized reasons for answering "Yes, I think this is a reliable source of information" were as follows: "because I already heard about this information" (48%), "because references exist in the text" (30%), "because the author of the article is credited" (13%), "because it sounds believable enough" (9%).

The categorized reasons for answering with "No, I don't think this is a reliable source of information" were as follows: "because there are no references in the text and the source is unknown" (22%), "because the author is not credited" (44%), "because there is no date when the article was written" (3%), "because the language of the written text sounds like a conspiracy theory" (9%), "because of the form and structure of the source" (22%).

The categorized reasons for answering "I'm not sure if the article is a reliable source of information" were as follows: "because the author is not credited" (42%), "because there aren't enough references" (31%), "because the language of the written text sounds like a conspiracy theory" (9%), "because I never heard of it before" (4%), "because it just doesn't seem reliable" (11%), "because I don't understand exactly determine why" (3%).

The categorized reasons for answering "I need more information about the article to decide whether it is reliable or not" were as follows: "because the author is not credited" (53%), "because there are no references" (33%), "because I never heard of it before" (7%), "because the source is unknown" (7%).

The second article was produced by mensdayout.com website**.** Although the author, credited simply as Team MDO, of the article claims that he/she does not take sides in the article, it is arguable to the contrary. The article also compares achievements of one activist (Greta Thunberg) and one inventor (Bojan Slat).[19] This kind of comparison has been criticized and labeled as unfounded over time. The so-called "meme" or picture of the comparison of the two young people has been shared many times even a year after its creation to the point of becoming viral, although it contains inaccurate information. The article in this paper has been labeled as biased information and inaccurate information.

Out of four available options the percentage of given answers are as follows: "Yes, I think this is a reliable source of information" were as follows: "because the references were included" (52%), "because I already heard about this topic" (32%), "because the author is credited" (14%), "because the form and structure look reliable" (1%).

The categorized reasons for answering with "No, I don't think this is a reliable source of information" were as follows: "because there are no references" (13%), "because the author is uncredited" (24%), "because the source is unreliable" (17%), "because the text is subjectively written" (20%), "because of the form and structure of the source" (20%), "because I have already heard about this topic" (3%)

The categorized reasons for answering "I'm not sure if the article is a reliable source of information" were as follows: "because the author is uncredited" (10%), "because the text is subjectively written" (17%), "because source is unreliable" (28%), "because I have already heard about this topic, but I am no expert" (21%), "because the structure and form are unreliable" (14%), "because I don't have enough information" (3%).

The categorized reasons for answering "I need more information about the article to decide whether it is reliable or not" were as follows: "because the author is uncredited" (45%), "because of the source is unreliable" (27%), "because I am no expert on the topic" (9%), "because I don't have enough information" (18%).

[19] Men's Day Out. (2019). Greta Thunberg – Zero Solutions – Nominated For Nobel Prize Boyan Slat – Ocean Cleanup Project Goes Unnoticed. Retrieved from https://www.mensdayout.com/in-the-social/great-thunberg-vs-boyan-slat/

The third article was produced by an existing website called abcnews.com.co which is a fake news website that imitates the URL domain, design and logo of the ABC News website[20]. Since the domain is slightly different it is difficult to spot that the website is fake, which greatly influences people's perspective of whether it is a reliable source of information or not. Although the article about the symptoms, causes, risk factors, and prevention of heart disease[21] is credible in its content, it is published by a website that mimics the official site of ABC's American television and radio network. Sources that misrepresent and emulate official sites of individuals or organizations should be avoided. As well as in the two previous articles, the participants were asked to choose one answer whether they think the source is reliable. Out of four available options, the percentage of given answers are as follows: "*Yes" - the participants think this is a reliable source of information* (29%), "*No" - the participant doesn't think this is a reliable source of information* (40%), "*I'm not sure" - the participant is not sure whether the article is a reliable source of information* (21%), but won't conduct any further research about the source, "*I need more information about the article to decide whether it is reliable or not"* (10%).

The categorized reasons for answering "Yes, I think this is a reliable source of information" were as follows: "because it's a reliable website" (13%), "because it uses medical terminology" (23%), "because I already know about this subject" (18%), "because it looks reliable and relevant" (21%), "because references are included" (13%), "because the information included are medical facts and there isn't any reason why they could be fake news (8%), "because it's under the category named "Health"" (2%).

The categorized reasons for answering with "No, I don't think this is a reliable source of information" were as follows: "because it's an unreliable source of medical information" (5%), "because the author is uncredited and should be a medical professional" (49%), "because the URL domain is fake" (4%), "because there are no references" (18%), "because I don't trust medical facts on the Internet" (9%), "because it's not professional enough" (14%).

The categorized reasons for answering "*I'm not sure if the article is a reliable source of information"* were as follows: "because the author is uncredited" (55%), "because it's not a medical website" (24%), "because there are no references" (4%), "because it seems reliable, but I'm not a medical expert" (17%).

The categorized reasons for answering "I need more information about the article to decide whether it is reliable or not" were as follows: "because the author is uncredited" (43%), "because it's not a medical website" (7%), "because there are no references" (36%), "because a doctor should verify this source" (7%), "because I'm not a medical expert" (7%).

The fourth article was produced by Croatian news media 24sata. The article has a sensational title: "*Here's why you should leave a spoonful of sugar in your yard*"[22]. The article includes a statement that a teaspoon of sugar should be left in gardens to save bees from extinction. The statement was first posted on social networks in 2018 under the false account of a person who introduced himself as popular British naturalist and TV host David Attenborough. The account as well as the statement itself are false, and although the BBC television itself has denied the alleged statement and revealed the person to be under a fake identity, it has inspired many articles. Since it was first published, the statement has been distributed over hundreds of thousands of times. This article has been marked as bogus or fake. As well as in the first three articles, the participants were asked to choose one answer whether they think the source is reliable. Out of four available options, the percentage of given answers are as follows: "*Yes" -*

[20] TruthGuard. Retrieved from: https://truthguard.org/publication/world/abcnewscomco

[21] ABCnews. (2019). Heart disease: Symptoms, Causes, Risk factors and Prevention. Retrieved from https://abcnews.com.co/heart-disease-symptoms-causes-risk-factors-and-prevention/

[22] 24sata. (2018). Evo zašto biste svi u svome dvorištu trebali ostaviti žlicu šećera. Retrieved from: https://www.vecernji.hr/vijesti/evo-zasto-bi-svi-u-svome-dvoristu-trebali-ostaviti-zlicu-secera-1256056

the participants think this is a reliable source of information (29%), *"No" - the participant doesn't think this is a reliable source of information* (42%), *"I'm not sure" - the participant is not sure whether the article is a reliable source of information* (22%), but won't conduct any further research about the source, "I need more information about the article to decide whether it is reliable or not" (7%).

The categorized reasons for answering "Yes, I think this is a reliable source of information" were as follows: "because the source is reliable" (18%), "because the author is credited" (23%), "because the article has references" (5%), "because it's David Attenborough's statement" (31%), "because I already heard about this information" (13%), "because it's short and understandable" (5%), "because it doesn't harm anybody, so there is no motive to be a fake information" (5%).

The categorized reasons for answering with "No, I don't think this is a reliable source of information" were as follows: "because it has a sensationalist title and it's clickbait types of content" (29%), "because the source is unreliable" (26), "because it's misinformation and not a fact" (16%), "because there are no references" (11%), "because the author is not credited" (10%), "because it's not a scientific paper" (5%), "no category" (3%).

The categorized reasons for answering "I'm not sure if the article is a reliable source of information" were as follows: "because it's a clickbait type of title" (3%), "because one of the references is David Attenborough" (7%), "because the source is not reliable" (20%), "because I'm not familiar enough with the topic" (37%), "because there are no references" (13%), "because the author is not credited" (10%), "because it lacks additional information" (10%).

The categorized reasons for answering "*I need more information about the article to decide whether it is reliable or not"* were as follows: "because there are no references" (70%), "because the author is uncredited" (20%), "I'm not sure" (10%).

8 Discussion

The majority of the student population included in the research were female students 81%, and 19% were male students, ranging from 18 to 33 years of age. Majority of the student population were Information Sciences students. The research shows that when asked to rate the credibility of the first article, majority of the students weren't sure whether it was a reliable source of information or not, but didn't show any motivation to double-check the source. When asked to answer questions about the second article, the majority of students were confident the source was true and reliable. Ironically enough, the article that contained truthful information (but was a fake website) was marked by majority of the students as fake news. The fourth article was marked by the majority of participants as fake news. According to the open-ended questions and the given answers, it can be concluded the students have a certain factors they apply when reading any source of information. From the categories gathered by the answers, it can be said that the students decide on the reliability of an information source according to the credited name of the author, date of when the article was published, does it contain references and hyperlinks to support the content, is the website a professional one, is the article grammatically correct and systematized, is the article biased or objective, what kind of terminology is used in the text, is the title and text written in sensationalist nature. It is interesting to see that participants listed unpredictable reasons for labeling information sources as true. One of the most concerning reason is marking the source as reliable because the participant was already familiar with the subject – which doesn't make information true. The name of the author (for example David Attenborough) has a high impact on deciding about the reliability of the information by the student, which is another red flag when talking about information and media literacy, since it is not unusual for people to post fake news under a false identity. Another surprising reason for mistakenly identifying content as reliable news is the number of hyperlinks

that appear in the text. If not carefully checked, an article can be full of hyperlinks which can also lead to other fake news sources.

9 Conclusion

It is interesting to see that the research results are similar to research conducted by Rasmus Kleis Nielsen and Lucas Graves in 2017, and that in this case the students are aware of fake news on the Internet, but based on examples shown, can partially identify fake news. Analyzing the open-ended answers, it is clear that the students are fairly convinced that they can recognize fake news, but at the same time the results show quite the opposite. The most correct answer: "*I need more information about the article to decide whether it is reliable or not"* was not commonly selected, as was expected. The results show the students have a reasonable and accurate mechanism that they apply to verify the reliability of a source, but at the same time this is not enough to correctly evaluate the credibility of an information source. This discovery can mean that the fake news industry has advanced so much that new and additional mechanisms for identifying fake news are needed, the known ones are not sufficient enough and that awareness of the difficulty of identifying fake news needs to be disseminated. For future research the student population could be extended and conducted internationally in various University levels.

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The Role of Metadata in Fake News Detection

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Abstract. Global technological progress created the infrastructure which enabled the digitization of media which in turn made it possible for almost everyone to become a journalist and produce news or nowadays fake news. The phenomenon of fake news is recognized throughout history (forging documents, defamation) and today it can be a result of unreliable media or individuals with motives to cause misinformation and disinformation of the general public. Fake news can be defined as false and unreliable information which appears as a completely trustworthy media content and the term can also refer to news satire and parodies, manipulation of photographs and video materials, news fabrication, propaganda and marketing. Technological progress has also enabled alteration of images and various other content with the help of sophisticated software. Altered content is easily accessible, especially via social media, so the general public can very quickly become misinformed with the fast-paced dissemination of false narratives and information. Due to the problems of ever-expanding fake news, it is important to be able to recognize altered or completely fabricated pieces of information. An average member of the general public can use different skills to do just that. First of all, there is critical thinking and media literacy but technical skills, using proper tools and platforms and having knowledge about metadata which describes fake news can be an answer for recognizing authentic, trustworthy, truthful and reliable content. The purpose of this paper is to showcase the importance of expanding one's skill set to recognize fake news and fake news photo in general. Using platforms such as *FotoForensics* it will be shown how metadata which describes online content can be used to discern fake and real photos i.e., how it facilitates recognizing of authentic content. The paper will also touch on the subject *of data craft* which encompasses the problems with social media and metadata manipulation. It was concluded that when media literacy skills and critical thinking are not enough, metadata can prove a useful way to discover fake news and vice versa.

***Keywords*:** fake news; fake news detection; digital object; metadata

1 Defining fake news

Fake news is a long-lived phenomenon which can be found as early as in the 15th century and it has been reinvented throughout history, most often in periods of technological innovation such as the invention of the printing press, post offices and systems, mass media newspapers, radio, film and television, and nowadays various software and the Internet. Throughout history the methods of distributing fake news were diverse and included forging letters, defamations, news about dragons, antireligious news, political propaganda, etc.[1] At the core of the term fake news lies misinformation which is defined as "wrong information, or the fact that people are misinformed; information intended to deceive".[2] It is perceived as an information whose purpose is necessary not to conceal real facts, but to intentionally create non-existent and distorted or even false beliefs with the intention to manipulate and deceive the reader/user of the aforementioned information. It can also be a veiled, inaccurate or ambiguous information, or can simply be incomplete, which can in turn cause misinformation especially if it is used in a different context.[1] Technological progress has created the infrastructure and an environment for fast paced spread of news which is available to everyone with access to the Internet. An

average user is surrounded by various media outlets, digitized media, an explosion of news and budding journalists who produce it. In this universe of information, it can sometimes be difficult to evaluate the news, its source, credibility and authenticity. The phenomena of modern-age fake news can be viewed as a result of unreliable media outlets and various individuals whose motives can be to cause misinformation or disinformation.[3] Fake news can be defined as false and unreliable information which can appear as a trustworthy media content, but actually there does not have to be a publishing process or truth behind its creation and dissemination.[3] It is important to highlight that all fake news does not have to disseminate malicious and deceitful content which is why news satire and parodies are included in various types of fake news. Manipulation of photographs (*faux photography*) and video materials (*deep fake* videos), news fabrication, marketing, propaganda, etc. are also included in the ever-expanding fake news phenomena. The aforementioned technological progress made all types of fake news easily accessible, especially via social media which quickly disseminates false narratives and information between the general public.[3] The question which poses itself is how to recognize altered or completely fabricated pieces of information. An average reader has multiple possibilities of fake news detection and one of them is critical thinking and media literacy. When encountering a suspicious content, a reader can check its source, author and date of creation. This data can easily help one discern if the content is authentic and truthful. It is also possible to check the website from which the content originated but it is also important to critically approach the text or a photo and determine the truthfulness of the content.[4] There are also five principles which can help in developing a sense of recognizing truthful content. Adams emphasizes them as extremely important while trying to teach others to raise the level of their media literacy. First principle states that it is equally important to know how to recognize relevant information and news which holds to the highest standards of journalism. This means that a person can develop his or hers critical thinking even more and have examples of news stories which are completely reliable and based on true events.[5] It is extremely important to be aware of different types of content and that the most accurate news can be obtained from institutional media which have a lot credibility. Also readers should be as objective as possible so that it would not happen that news or a photo is accepted as accurate and truthful because it confirms our thoughts or beliefs on some subject. Being misinformed can cause difficulties in day-to-day work or living situations so it would be useful to try to recognize fake news by scrutinizing available content, but when all else fails a person can turn to digital forensic tools and online platforms which are useful when determining obvious factors is simply not enough.[5] These tools allow users to check available metadata of the suspicious content, but it is important to emphasize that metadata can also be manipulated and it is important to obtain skills which can help discern what does it mean if metadata is missing from the content?

2 Data craft

Technical skills and knowledge about metadata which describe the fake news content provide other possibilities of recognizing authentic and trustworthy content or fake news. Being able to recognize false information using metadata can provide a path to discerning reliable content from fake one especially when it comes to digitally altered photographs. But it is nevertheless important to emphasize that an authentic digital object does not have to be reliable and vice versa. For example, it is possible to manipulate metadata and every intentional manipulation of metadata, which aims to make metadata equally readable by both algorithmic systems and humans, is called data craft. This term was introduced by Amelia Acker, Assistant Professor at the School of Information at the University of Texas. Social media and various other webpages frequently strip metadata from its content especially because metadata is an important part of

verifying the authenticity and truthfulness of fake news.[6] *Data craft* includes practices that create, rely on, or even play with the proliferation of data on social media by engaging with new computational and algorithmic mechanisms of organization and classification. Some attempts of manipulations are easy to detect because data manipulators leave clues that they were not even aware of, and which can easily reveal what their intent was. Those who are more adept at hiding their true intentions and manipulating data are more difficult to discover, therefore, right methods must be developed to make it easier to detect them. Social media is most often used by data manipulators to spread disinformation. There are five steps to implementing data craft and discovering whether content creators are using metadata on social media for the placement of fake news.[6]

The first step is to look at the account name. The second is to analyze the content of the profile/account, for example profile photo, biography section, etc. and the third step is to look and analyze the tags used to describe the content. Steps four and five allow readers to locate evidence of manipulation and disinformation resulting from coordinated engagement strategies that generate inauthentic behavior. These two steps are aimed at analyzing account followers and the interaction maintained by the account owner with other users of a particular social media.[6] It is possible to raise awareness of fake news to a higher level, and for example information experts can include metadata that can help distinguish real news from fake ones. First, we need to clarify the meaning of metadata terms. The established definition of metadata is „the names that represent aggregated data. Once data are collected, they can be assembled, classified, and organized into structures with these names. People are able to develop meaning, create claims, make decisions, and create evidence with data once it is represented in aggregate with metadata.“[6] Manipulating metadata for spreading fake news can seem like a very challenging skill set. Metadata manipulation is becoming more common on social networks that have become our daily routine. What we need to pay attention to is when, how, where and why fake news creators create such content. We often do not even think that something is fake, even though it leaves a very strong influence on us and cuts into our memory. The main target of fake news manipulators are mainly politicians and political parties, governments, celebrities, large companies, etc. They generally have profiles on social media networks through which they express their views and beliefs, encourage masses to think, or, on the other hand, invite them to buy and use their products. For users and platforms alike, it is getting harder to discern “real” users and authentic account activities from fake, spam, and malicious manipulations.[6]

The purpose of this paper is to showcase the importance of metadata in recognizing authentic and reliable content, and ultimately being able to recognize fake news. The research will concentrate on various fake photos and fake photo news. Using *FotoForensics* these fake photos will be analyzed. It is presumed that this news has been stripped of some metadata but not from all of them. It is important to understand the environment in which fake news are spread, and social media and data craft can provide that understanding. In the following examples, it will be shown how reading metadata can be viewed as a method to validate or dispute fake news photographs, obtained from satirical websites such as *The Onion.com* and Croatian *NewsBar.com,* can help understand the craftiness of media manipulators but also the metadata important for determining the truthfulness of the content.

3 Methods

Type of common fake news are various parodies and satirical news which can contain fake photos of important political figures, celebrities, places and various objects and even fictional characters. They can stand alone or be a part of an article which contains deliberately false information. *The Onion*[7] in the USA and *NewsBar*[8] in Croatia are websites which contain

aforementioned content and deliberately altered photos. Some of these photos and news are easily recognized by a user but some of them, especially only photo news, are not that easy to recognize. Following the last principle which Adams stated[5], it is possible to use tools for digital forensics which can quickly and easily show if a photo has been manipulated. For the purpose of this research, different photo news has been selected (Figure 1). They can be found on previously mentioned satirical websites and there was only one criterion for their selection. They had to be available for download and be a part of satirical news because it was assumed that they are altered to fit the purpose of being a satire of current events.

a) b)

c) d)

Fig. 1. Digitally altered photos downloaded from The Onion a) and b) and NewsBar c) and d)

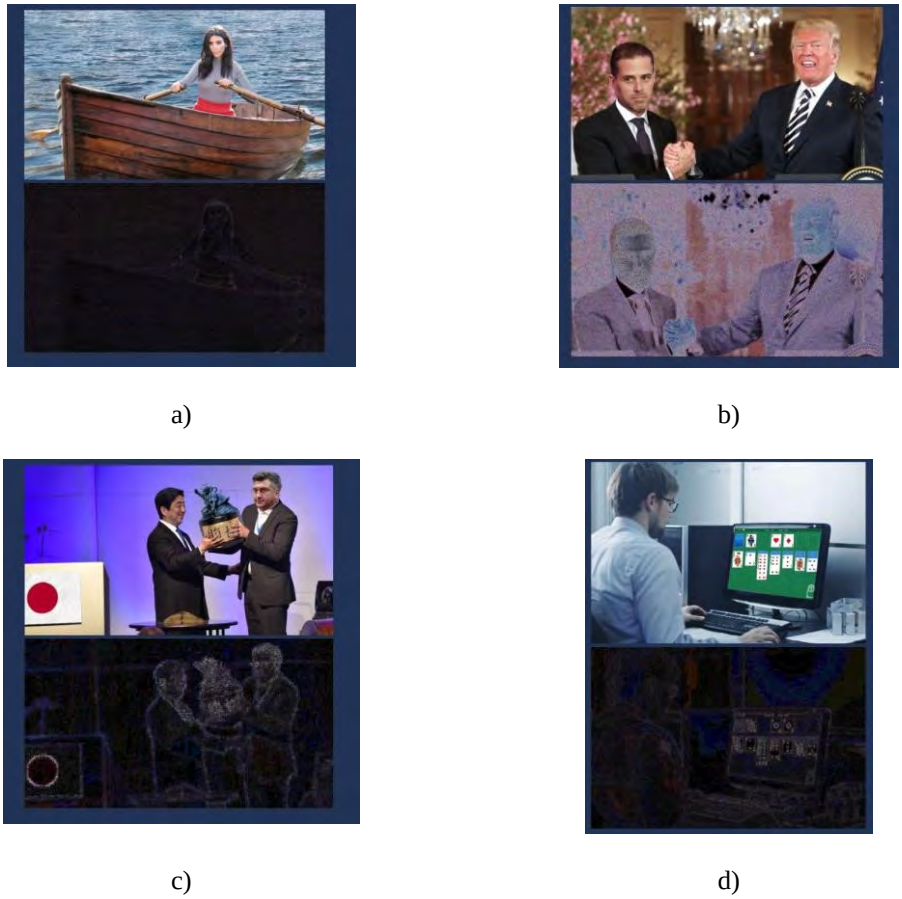
Downloaded photos have been uploaded to the digital forensics platform *Fotoforensics* which allows an analysis of uploaded photographs by providing, among other analyses, a metadata report. *Fotoforensics* is a web platform which allows researchers and general public access to sophisticated tools for digital photo forensics. Neal Krawetz has developed algorithms which are used for analyzing photographs via *FotoForensics.* This platform is made available by *Hacker Factor* and it is a free web-based tool which serves as an introduction to the field of digital photo forensics.[9] Platform made available several analyses which include

- **color analysis** (image enhancement; adjustment of HSV color space which can enable noticing some altered details in overly dark digital photographs);[9]
- **digest** (digital summary of an uploaded file; enables the researcher to know that a proper file/digital photo is being evaluated; it includes meta properties, times stamps and checksums);[9]
- **error-level analysis** (enables identifying parts of an image which have a different compression level; it the levels are different photo is likely altered);[9]
- hidden pixels;[9]
- **JPEG %** (estimates JPEG quality)[9]
- **metadata analysis** (describes and lists all available metadata)[9] and
- **search** (allows searching for a similar picture).[9]

All of these tools are helpful in determining whether a digital photo has been modified, but Error-level analysis (ELA) and metadata analysis are especially important for this paper because those were the methods used for identifying elements of altered images. Each digital photo from a sample of four digital photos has been uploaded to the website and ELA and metadata analyses were the ones which were applied.

4 Results and Discussion

The first analysis conducted was Error-Level Analysis (ELA) which shown that all of the samples analyzed have been digitally altered. As it was stated before, ELA shows different compressions of images which are analyzed. The parts of the pictures which are lighter than the rest of the picture have a different compression level which indicates alteration of images. The analysis outputs are shown in Figure 2. Digital photographs depict a celebrity in a funny situation which is accompanied by the text of her escape (Figure 2. a), two encounters of politicians (Figure 2. b) and c) and an everyday office situation (Figure 2. d). Differences in compression levels are most obvious in photographs Figure 2. c) and d). It is clear that certain parts have been added so that the digital photo would accompany the satirical text. Figure 2. c) is clearly fake news even to the human eye but others are not so easily recognized as fake. In this case a user can simply remove doubt about the veracity of these digital photos by performing a simple two-step analysis. Downloading the photo and uploading to the *FotoForensics* website will easily shed any doubt about fake news photographs.



a) b)

c) d)

Fig. 2. Results of Error-Level Analysis performed on samples obtained from *The Onion* a) and c) and *NewsBar* c) and d)

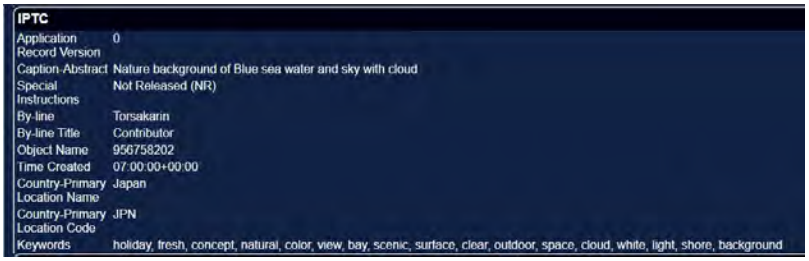
Second analysis which was performed was metadata analysis and for this type of analysis concerning digital photographs it was significant to analyze *Exchangeable Image File Format Metadata Standard* (EXIF). EXIF contains metadata which can help in recognizing any alterations made to the digital photo or it can help in a more obvious way – by stating the origin of the photo. The metadata shown in Figure 3. clearly show that the image of a celebrity in a boat is a

digitally altered photo. In this case the significant EXIF metadata are *image description*, *software*, *modify date*, *artist*, *date/time original* and *create date*. The original photo has been made by *Torsakarin* in 2013, it shows a nature background of blue sea water and sky with clouds and it is clear that the photo has been modified in 2019 via Adobe Photoshop licensed in 2019.

EXIF	
Photometric Interpretation	RGB
Image Description	Nature background of Blue sea water and sky with cloud
Make	Canon
Camera Model Name	Canon EOS 5D Mark II
Orientation	Horizontal (normal)
Samples Per Pixel	3
X Resolution	300
Y Resolution	300
Resolution Unit	inches
Software	Adobe Photoshop CC 2019 (Macintosh)
Modify Date	2019:09:05 11:27:08
Artist	Torsakarin
Exposure Time	1/250
F Number	9.0
Exposure Program	Aperture-priority AE
ISO	250
Exif Version	0221
Date/Time Original	2013:05:08 14:31:26
Create Date	2013:05:08 14:31:26

Fig. 3. EXIF metadata for the digital photo of a celebrity (Figure 2. a)

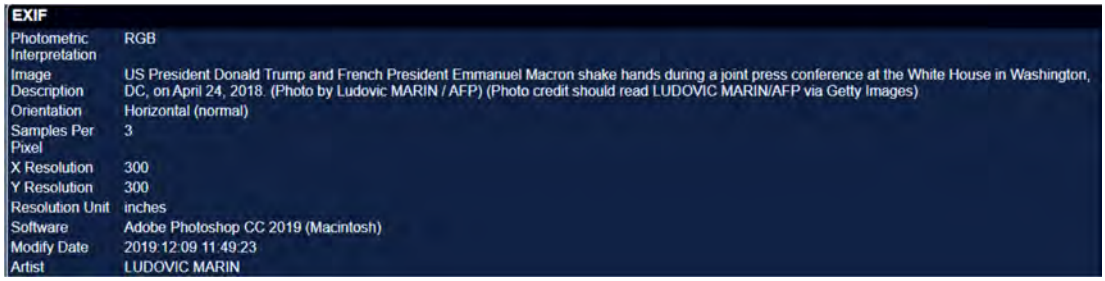
Figure 4. shows *International Press Telecommunications Council Photo Metadata Standard* (IPTC) in which is shown that the county in which the digital photo originated is Japan. It is further proof that the image is digitally altered. Keywords describing the photograph are also visible in the metadata analysis.



IPTC	
Application Record Version	0
Caption-Abstract	Nature background of Blue sea water and sky with cloud
Special Instructions	Not Released (NR)
By-line	Torsakarin
By-line Title	Contributor
Object Name	956758202
Time Created	07:00:00+00:00
Country-Primary Location Name	Japan
Country-Primary Location Code	JPN
Keywords	holiday, fresh, concept, natural, color, view, bay, scenic, surface, clear, outdoor, space, cloud, white, light, shore, background

Fig. 4. IPTC Photo Metadata for the digital photo of a celebrity (Figure 2. a)

The photograph shown in Figure 2. b) had a rich metadata analysis which undoubtedly showed that the image was altered and intended as a misinformation photograph because it depicted a completely different person accompanying the prominent politician. As in the previous case the EXIF metadata *image description*, *artist*, *modify date*, *software* (Figure 5. a) and in this case *Extreme Memory Profile* (XMP) data *date created*, *history*, *create date* and *metadata date* let the user know that this photograph has been changed for the purposes of being available on the satirical website *The Onion*.



EXIF	
Photometric Interpretation	RGB
Image Description	US President Donald Trump and French President Emmanuel Macron shake hands during a joint press conference at the White House in Washington, DC, on April 24, 2018. (Photo by Ludovic MARIN / AFP) (Photo credit should read LUDOVIC MARIN/AFP via Getty Images)
Orientation	Horizontal (normal)
Samples Per Pixel	3
X Resolution	300
Y Resolution	300
Resolution Unit	inches
Software	Adobe Photoshop CC 2019 (Macintosh)
Modify Date	2019:12:09 11:49:23
Artist	LUDOVIC MARIN

a)

XMP	
XMP Toolkit	Adobe XMP Core 5.6-c145 79.163499, 2018/08/13-16:40:22
Category	A
Source	AFP
City	Washington
Authors Position	Contributor
Copyright Flag	true
Country	United States
Date Created	2018:04:24 07:00
Credit	AFP via Getty Images
Transmission Reference	775157133
Headline	US-FRANCE-DIPLOMACY-POLITICS-TRUMP-MACRON
Url	http://www.gettyimages.com
Instructions	Not Released (NR)
State	District of Columbia
Legacy IPTC Digest	9F3A82839549A16041ACAC0AD30C223B
Color Mode	RGB
ICC Profile Name	sRGB IEC61966-2.1
History	2019-12-09T11:29:22-06:00 File GettyImages-950818554.jpg opened 2019-12-09T11:39:23-06:00 File _GettyImages-950818554469D16EE883698C234 4B6EB8DBACF4F40.psb saved 2019-12-09T11:48:54-06:00 File Trump_Offers_NIB-GR.psd saved 2019-12-09T11:49:23-06:00 File Trump_Offers_NIB-GR.jpg saved.

b)

Fig. 5. EXIF a) and XMP b) data metadata for the digital photo of a prominent politician (Fig. 2. b)

For the last two examples obtained for Croatian satirical website *NewsBar* ELA analysis has proven better because there were no original metadata but only some which actually do not tell us much about the digital photo (Figure 6).

File	
File Type	JPEG
File Type Extension	jpg
MIME Type	image/jpeg
Comment	CREATOR: gd-jpeg v1.0 (using IJG JPEG v80), quality = 90
Image Width	1175
Image Height	651
Encoding Process	Baseline DCT, Huffman coding
Bits Per Sample	8
Color Components	3
Y Cb Cr Sub Sampling	YCbCr4:2:0 (2 2)
JFIF	
JFIF Version	1.01
Resolution Unit	inches
X Resolution	120
Y Resolution	120
Composite	
Image Size	1175x651
Megapixels	0.765

a)

File	
File Type	JPEG
File Type Extension	jpg
MIME Type	image/jpeg
Comment	CREATOR: gd-jpeg v1.0 (using IJG JPEG v80), quality = 90
Image Width	1600
Image Height	1061
Encoding Process	Baseline DCT, Huffman coding
Bits Per Sample	8
Color Components	3
Y Cb Cr Sub Sampling	YCbCr4:2:0 (2 2)
JFIF	
JFIF Version	1.01
Resolution Unit	inches
X Resolution	96
Y Resolution	96
Composite	
Image Size	1600x1061
Megapixels	1.7

b)

Fig. 6. Metadata analyses for examples shown in a) Figure 2. c) and b) Fig. 2. d)

The conducted analyses have shown that technical tools and skills can also be a part of discovering fake news especially digital photos but also gave proof of data craft i.e. manipulation of metadata which was a part of the original photo.

5 Conclusion

Fake news causes misinformation but can also be entertaining which can be seen in plenty satirical news stories and parodies. But nevertheless it is still and unreliable information which appears trustworthy media. Journalists and other web content producers have skills and tools which enable them to use, enhance or completely alter digital photographs and also various other content. Problems of recognizing fake photos or other fake content can be solved by raising awareness of the importance of media literacy and critical thinking, but also by educating the interested readers and other members of the public. Enhancing technical skill can also be a useful way of solving the problem of fake digital photography. Metadata analysis can present the simplest way of discovering fake content, but it is necessary to have prior knowledge which will enable the users of various tools and platforms for digital forensics to comprehend the meaning of metadata. Users need to be aware of metadata manipulation which can void all of the original metadata and make it hard for analyzing the authenticity of fake news. There are other ways besides metadata analysis to use and one of the purposes of this paper was to showcase the importance of technical skills which complement critical thinking and other

simpler methods of discerning fake news. *FotoForensics* was used as a platform for multiple digital forensics tools which facilitate the recognition of authentic content. By analyzing the selected fake digital photo examples, it was concluded that when media literacy skills and critical thinking are not enough, metadata can prove a useful way to discover fake news and vice versa. Also it was concluded that if metadata is not available then Error-Level Analysis (ELA) is a good substitute. Using ELA to better one's critical thinking and objective approach to fake news content is also a good way of discovering fake news or in this case fake digital photos. Small number of examples because the emphasis was on the tool and metadata importance and analysis and not on the deep analysis of fake digital photos.

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The Roles of "Library as Place" for Providing Reliable Information in the Democratic Society

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Abstract. It is very important to obtain reliable information in the present age when information overflows and non-factual information such as fake news is easily distributed. In this situation, libraries have served as places to handle reliable information. Libraries are places where people who cannot have information technology devices can do information gathering and people who have various backgrounds such as cultural, educational and economical can meet each other. Therefore, libraries are places performing the legitimacy and promoting justice in democratic society. In this paper, we conducted a comprehensive literature review. We organized it by following three perspectives, that is, (1) Libraries as information infrastructure, (2) Providing services for the use of information and user benefits and (3) Information activities at libraries in democratic society. As a result, it was clear that libraries provide reliable information to library users and support to handle information without being misled by disinformation by doing information literacy education. Moreover, it was revealed that libraries promote democratic society by providing a place that library users can exchange information and discuss it.

Keywords: Reliable Information; Library as Place; Democratic Society; Information Literacy

1 Introduction

In recent years, people can get various information quickly because of the dissemination of the Internet through technology development. People can also easily become senders of information through social network services (SNS). On the other hand, disinformation such as fake news has appeared and diffused online, and it has been a serious social problem (Fletcher et al., 2018; Lazer et al., 2018). The distribution of incorrect information that is not only information related to everyday life but also related to political, legal, or medical issues has a personal or social disadvantage (Merchant & Asch, 2018; Allcott & Gentzkow, 2017). The information that forms the basis for the public opinion that supports a democratic society must be clear and reliable. In such an era, the role of libraries providing reliable information has been emphasized (Walsh, 2010; Buschman, 2019). In the library, we can get a lot of primary sources and reliable information selected by librarians. Also, the development of digital libraries has made it technically possible for users to collect information through electronic devices from home or on the go. Due to the decrease in the need for users to visit the library, there have been many discussions about the significance of physical libraries by library administrators and researchers (Gosling, 2000; Dobbie, 2001; Demas & Scherer, 2002; Berndtson, 2003; Ludwig & Starr, 2005; Hapel, 2012).

The library BiblioTech with no paper materials in the United States opened in 2013, and the Helsinki Central Library Oodi with a large site in Finland had a grand opening in December 2018, so these phenomena reflected certain needs for the physical properties of the library in the 21st century. In other words, libraries are not considered to be just institutions that provide information that can replace online. In this paper, we focus on the essential role of a library as

a “place” that supports people's information behavior in the modern democratic society and organize their roles by comprehensively reviewing literature that has focused on the functions and roles of libraries that require space. This research consists of the following three perspectives, specifically regarding the information behavior of library users: (1) Libraries as information infrastructure, (2) Providing services for the use of information and user benefits and (3) Information activities at libraries in democratic society.

2 Libraries as information infrastructure

As stated in the IFLA / UNESCO Public Library Manifesto (1994), collecting, preserving information and knowledge and providing it to users are one of the basic roles of libraries, these are also traditional roles played by libraries. Many related documents focusing library as a place pointed out these important roles. For examples, Rusbridge (1998) mentioned the concept of the “Hybrid Library” from an Electronic Libraries Program (eLib) in the UK. The author stated the role of information infrastructure as a follow.

> *“There is an enormous range of available information in the world. The role of the library is to select, acquire, organise and make available an appropriate subset of these resources. This focusing in from the universe of resources is significant in many contexts, including for learners. Partly this is an issue of quality control. A substantial part of the HEI community is perhaps ill equipped to assess the quality of the information resources they may find. The library has a role here in the digital world as with print - not just in excluding access to rubbish, but in encouraging access paths to quality”.*

On the other hand, Manoff (2001) referred to Nicholson Baker’s allegations about library preservation policies and practices and attempted to understand the symbolic roles of libraries in cultural imaginary while declining print materials were predicted in the digital society. Regarding the role of libraries in the context of the establishment and preservation of historical records, the author stated, “As libraries are understood to play a major role in maintaining and sustaining that record, it is no wonder that they are currently the focus of widespread anxieties about their ability to do so”. Weise (2004) provided a historical overview of the roles and functions of the library as a place, from a lecture focused on the history and philosophy of health science librarianship by Janet Doe. In the “Value of as a Place” section of this document, the author described the practical use of the library as a place, such as staff workplaces, places where students use computers and study, and places where users have meetings or discussions about their projects or research questions. Furthermore, as a role beyond these, “libraries serve as the depository of the written historical record of the knowledge of cultures and civilizations”. Others such as Harris (1978) and Dobbie (2001) referred to the information infrastructure roles.

It is a librarian who selects and manages information in the library and provides information suitable for individual users, and it can be safely said that it is indispensable to the libraries as information infrastructure. Evjen & Audunson (2009) conducted a focus group interview on whether the image to public libraries in Norwegian become a barrier to institutional changes. They described the traditional roles of public libraries and librarians as “public libraries were supposed to promote enlightenment, education and culture by providing the public with quality material based on the librarian’s professional criteria”. Nitecki (2011) provided a framework that considers various factors for space evaluation in academic libraries. The author mentioned to changes in Library Paradigms, especially the role of librarians “focus on acquiring, organizing, and preserving information resources; interpreting client needs and providing guidance to locate and access information to meet their individual requirements; and on building partnerships to maximize the institution's ability to create and share knowledge in the service

of research, teaching, and intellectual growth". Others such as Kent (1996) and Mardis (2011) mentioned to the roles of librarians as information providers and manager.

3 Providing services for the use of Information and user benefits

Libraries, the information infrastructure for people, have also functioned as places where users can receive various supportive information services. Many libraries have been conducting reference services and referral services in response to inquiries from users and making pathfinders for topics of high interest (Stevens et al., 1973; Wiegand, 2003; Kumar, 2015). Such services for supporting the use of information by users have been further expanded in the digital society.

Kerslake & Kinnell (1998) examined social impacts and effectiveness of public libraries through a literature review in the field of community development in the UK. With reference to Kerslake & Kinnell (1997), the authors referred to roles of public libraries regarding impacts on users' "skills" such as the improvement of adult IT literacy skills accompanying rapid technological and social changes and the provision of IT equipment and services for lifelong learning / open learning. In particular, they pointed out that IT literacy has become an indispensable skill for finding jobs, and states that these above roles contribute to social equity in the information society. Nicholson (2013) referred to the library's role in digital information literacy for users in an overview of the history of providing games in libraries so far:

> *"In the digital age, libraries serve as a portal to digital information literacy. For many, the library was the first place they were able to spend time with a computer in a nonwork and non-school setting. As more people got their own computers, the libraries became places for computer classes, and they are, even today, one of the few places where members of the public who are not in school can continue learning about their systems for free. In many communities, the library serves as the point for those without Internet access to get online and for those who have Internet access at home to learn how to use the Internet safely and more effectively".*

Some researchers have also mentioned the role of contributing to the social problem of information inequality. Russell & Huang (2009) examined the problems of the digital divide in the United States from various national and organizational reports and verified the efforts that libraries can make. They stated that the principal plan for closing the gap in the digital divide is "Increasing the availability of public access computers". They also stated, "All types of libraries do much to equalize the digital and information divide by providing their communities with free access to Internet-equipped computers, various software and databases, and opportunities for valuable training and assistance provided by their staff". Craven (2011) considered the role of libraries focusing on the issue of fair access in the information age. The author concluded as follows with examples of information technology training for users and efforts to provide equal access to various users:

> *"Libraries are well placed to contribute to closing the digital divide: they can play a role in enhancing information literacy skills and motivate people to use ICTs by introducing them to the benefits of technology in ways that are meaningful to them rather than simply providing access, and by providing appropriate support and user education. Libraries can also play an important role in widening access through the creation of accessible e-content and e-resources, and through appropriate education and training embedded into LIS curricula and programs of CPD".*

4 Information activities at libraries in the democratic society

The following literature discusses what kind of information activities can occur in a library in the democratic society. Kranich (2001) discussed the library as a democratic place through the concept of social capital. According to Putnam definition (1993), “social capital” is “features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions”. Kranich stated that libraries are information commons, and that citizens learn from librarians how to find, evaluate and use information essential to self-determination and political decisions. She also claimed that public libraries create social capital by providing citizens with a place to tackle personal and community issues. In addition, she illustrated at the beginning that libraries played a role of shelter in an emergency. After September 11 in 2001 in the United States, “Libraries in New York and around the country provided comfort, fellowship, news, and resources during this difficult period”.

Leckie & Hopkins (2002) investigated uses of public libraries in Toronto and Vancouver in Canada and discussed the social role of the library as a public place. The authors showed from the survey results that provides a place for reading, providing access to technology, and providing support for lifelong learning are important library services. They also stated that public libraries have continued to be “a principle institution of the public sphere”. The public sphere is a concept proposed by Habermas (1992) and refers to a sphere that forms a public opinion by discussing common concerns in public places. In this regard, Williamson (2000) stated “Habermas’ theories of the ‘public sphere’ as an accessible and transparent arena for rational debate could be seen as being the idealized definition of the Public Library”. Audunson (2005) discussed the role of public libraries as a meeting place in today's multicultural and digital society. He also referred to the concept of Habermas' public sphere, stating “The public library's traditional role as an agent for democracy is closely linked to Habermas' theories on the public sphere”.

Houghton et al. (2013) examined how libraries can physically and digitally support the construction of community networks through case studies. The authors took up the concept of third place in Oldenburg (1999). Third place is determined “a generic designation for a great variety of public places that host the regular, voluntary, informal, and happily anticipated gatherings of individuals beyond the realms of home and work”. The authors showed that the library has a role as the third place and a link between nontechnical users and online media.

As other information utilization, Mazik & Sala-Hołubowicz (2017) said that the inspiration by the creative process of contemporary artists deepens the understanding of cultural facilities like libraries, and the library is “not only an institution that gathers knowledge, but also one that makes it possible to create and add to the body of knowledge through experience”.

5 Conclusion

Figure 1 summarizes the role of the library as a place for information behavior that has been shown so far.

As shown in Figure 1, we organized the roles of “library as place” for people's information behavior into eight phases: <Selection>, <Accumulation>, <Provision & Education>, <Learning>, <Exchange & Discussion> and <Creation>. First, librarians who are information specialists select to reliable information from all over the world <Selection> and libraries function as storage location <Accumulation>. Libraries play roles of places that librarians provide accumulated information to users and educate information literacy to them <Provision & Education>. From the user's perspective, they can use libraries to study voluntarily as a lifelong learning place <Learning>, and they can exchange their acquired information with each other and discuss community topic <Exchange & Discussion>. Finally, libraries in recent years are starting to

function as a place where users can create new knowledge and information through the acquisition and use of information <Creation>.

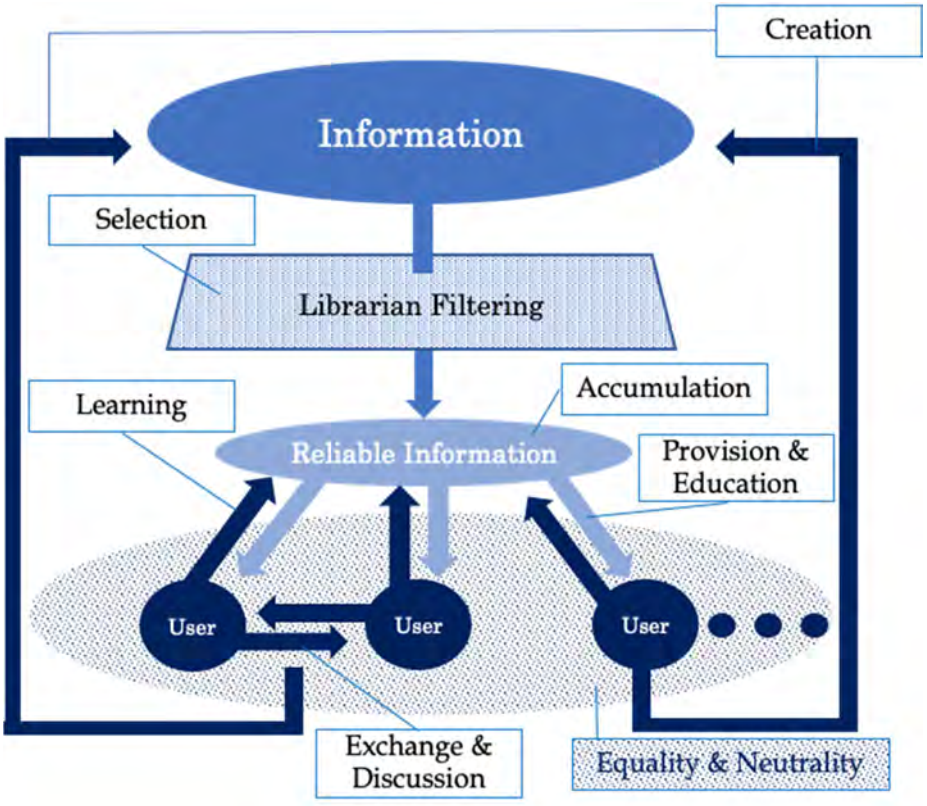

Fig. 1. A circulation model of the role of "library as a place" focusing on information

Libraries have traditionally played a role in collecting, organizing, storing and providing information and materials to users. The library materials have been mainly on paper media for many years, but it has also dealt with audiovisual materials such as CDs and DVDs. Besides, with the development of information technology in recent years, digital materials are spreading rapidly, and libraries that are responsible for digitizing existing paper materials and collecting bone digital materials are appearing. While media is diversifying, we need access to the corresponding electronic devices in order to use new media such as digital materials. The libraries have electronic devices such as PCs and the Internet environment and provide a place where people who do not have such an electronic device can access digital materials. In other words, the library functions as a place to bridge the information gap between people who cannot economically possess electronic devices and people who live in environments that are not connected to the Internet. In addition, by creating an environment for using digital devices in libraries, librarians can give lectures on how to use digital devices for people who are unfamiliar with them, and improve the information literacy skills of users to select correct information by themselves. It is also expected to contribute to the social problem of the informational gap by training literacy ability.

Moreover, as lifelong learning has become widespread worldwide, it has been pointed out that libraries are citizen universities that offer various learning opportunities. Along with the trend of active learning, information commons/learning commons can be created in academic libraries, and maker spaces with the latest technology such as 3D printers can be created in public libraries. As Mazik & SalaHołubowicz (2017) pointed out, the library is not only a place for learning using information and knowledge collected by users but also a place for supporting the creation of new things. It was shown that he also has a role. It was pointed out that the library

can be a place where information exchange and discussion between users can occur from the viewpoint of the utilization of information and knowledge.

The reason why can become such places is considered to be an institution with equality and neutrality. In particular, public libraries can be used free of charge for all ages from children to the elderly, so they support a wide range of activities from reading programs for infants to using digital devices for the elderly, providing information literacy education, and supporting lifelong learning. Also, because libraries are institutions that take a neutral position on materials and information, there is an example in which representatives of political parties provide a place to speak during elections (Lake County Public Library, 2019). As libraries take a neutral standpoint for citizens as well, minorities such as migrants, refugees and social excluders such as homeless people are equally accepted. Furthermore, there are examples of providing support for people who are unfamiliar with languages, such as organizing language cafes (Johnston & Audunson, 2019). In other words, because of its equality and neutrality, libraries can form an essential place that supports people's information behavior in a democratic society.

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Statistical disinformation in the Library Association of Latvia reports

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Abstract. Author of this paper during bachelor thesis research faced with the problem of statistical data. The number of participants of the Library Association of Latvia (LAL) events on various resources are shown differently. These inaccuracies are making the wrong impression, it is form of information disorder – disinformation. This situation also influences the quality of further researches. If researcher does not have access to primary data source, he or she could trust to false but easily accessible data.

The aim of this paper is to research the number of participants of LAL annual events, its statistical reflection accuracy in reports and publications.

Scope of research: The research analyzes tendencies of statistics which reflects the number of participants of LAL annual events from 1989 (reestablishment of LAL) to 2018. Research questions:

1. Are statistical data of LAL annual events being reflected correctly?
2. In which period there have been characteristic inaccuracies at the reflection of the number of participants of LAL annual events?
3. How do statistical inaccuracies influence the process of research?

Results: The statistics of participants of LAL annual events are not inaccurate at every year, it is a periodical phenomenon. At some periods it is noticeable that there are at least three different versions. This situation makes research process more difficult – it is complicated to find out which is correct one without access to primary data.

***Keywords*:** Library Association of Latvia; reports; annual events; statistics; research

1 Introduction

Purpose of this study is a situation, that trust to information and data in recent years has become a very actual issue. During the research, there is possible to face with this problem. Working out bachelor thesis, the author of this study had difficulties to find out, which number of the event participants is the correct one.

Scope of the study: in this paper there are analyzed statistical (number of participants, attendance) reflection of Librarian Association of Latvia (LAL) annual review events (annual conferences/congresses). The selected chronological frame is from the year 1989 (LAL reestablishment) to 2018.

The aim of this study is to research the attendance of LAL annual events and its statistical reflection accuracy in reports and publications.

Object of the study is LAL.

Subject of the study is statistical data of LAL annual events. **Research questions:**

1 Are statistical data (attendance) of LAL annual events being reflected correctly?

2 In which period there have been characteristic inaccuracies at the reflection of the attendance of LAL annual events?

3 How do statistical inaccuracies influence the process of research?

Theoretical basis is Principle of Least Effort.

Used **methodology** is qualitative research method – document study.

Empirical basis consists of archive documents of LAL and library science professional magazines.

Structure of the paper: introduction, 3 chapters with subchapters, list of 8 used information resources and 1 table.

Research review

Author of this paper during research of bachelor thesis "Library Association of Latvia and its professional experience sharing activities since the reestablishment" found out that number of participants of LAL organized events in various resources are shown differently (Pike, 2019). This problem of statistical data reflection inaccuracies makes an influence on research process.

Researchers collective from Netherlands (information science researcher Kathleen Gregory, computer science researcher Paul Groth, data science activists Helena Cousijn and Andrea Scharnhorst (1961), and social science researcher Sally Wyatt (1959)) have worked out thematically related research about behavior of users at data seeking and evaluation. They viewed different disciplines – astronomy, earth and environmental sciences, biomedicine, field archaeology and social sciences (Gregory, Groth, Cousijn, Scharnhorst, & Wyatt, 2018).

To work out data retrieval model they have used two analytical frameworks:

1 Information retrieval – the dynamic interaction between users and systems (three main stages: users and their needs, user actions, evaluation);
2 Data communities – the recognition and fixation of cases (researchers as data users).

As research methods authors have used analysis of literature and keywords, and bibliometrics to view the links of citations and the interconnections of literature records.

In the result of research they have find out that reuse of primary data is very important, especially in social sciences, but the issue of availability to it makes an influence to primary data usage: "Data seekers rank accessibility as the most important factor determining satisfaction with data reuse" (Gregory, Groth, Cousijn, Scharnhorst, & Wyatt, 2018, p. 11).

The importance of prior data reuse also claims American information and library science researchers Ixchel M. Faniel and Elizabeth Yakel (1960). They approve that prior data reuse in social sciences gives higher level of trust and it helps to easier follow the usage of currently existing data, citations and the creation of new data (Faniel, & Yakel, 2017).

This situation makes an influence on the quality of further researches. If researcher has some obstacles to access primary data resources, then in most cases he or she would use possibly inaccurate, but easily accessible data (Gregory, Groth, Cousijn, Scharnhorst, & Wyatt, 2018).

2 Theory and methodology review

To complete the aim and tasks of this study, as research method have been used document study, but as theoretical basis – the Principle of Least Effort.

2.1 Theory review

The Principle of Least Effort has been worked out in 1949. The author of this theoretical principle is American philologist George Kingsley Zipf (1902–1950). It explains the phenomenon how individuals minimize resources of work at solving both immediate and probable future problems at the same time, because both problems are being viewed against each other (Zipf, 1949).

Related to the topic of this study, the influence of statistical inaccuracies to research process causes immediate problem, which could be data obtaining difficulties, and probable future problem, which sets researcher by himself – it could be expected sanctions of being late for the research submission deadline. To successfully solve problems of both levels at the same time, in the data obtaining used resources (involved time and effort) are being minimized.

Least effort is closely related to the least work. The author of theory claims:

the minimizing of [invested] work in solving today's problems may lead to results that will increase tomorrow's work beyond what would have been necessary if today's work had not been completely minimized. Conversely, by expending more work than necessary today, one may thereby save still more work tomorrow (Zipf, 1949, p. 6).

This situation is possible to associate with work of document making, in which "today" are not used accurate statistical data and "tomorrow" it creates additional difficulties.

2.2 Methodology review

Document study is "the data obtaining method, which adds an accent to specific data form (documents) and uses conventional textual analysis methods" (Martinsone, Pipere, & Kamerade, 2016, p. 262). By using document study there are being analyzed both paper and electronic format documents, which content is thematically related to researchable process or phenomena.

In this study there is used qualitative content-analysis approach, which is qualitative data obtaining method. Using this method, it is possible to work out a model or categories, which displays researchable phenomena (Martinsone, Pipere, & Kamerade, 2016).

It is being claimed that content of documents and the decision what and how to record are being influenced by the social, political and economic environment at the time when documents are being produced. Documentation of historical scenes is dependent of manipulations and selective influence: "In undertaking documentary research, we should be aware of these influences and not assume that documents are simply neutral artefacts from the past" (May, 2002, p. 197).

To work out this study, by using document study there are reviewed such resources:

- Archive documents of LAL:
    - Documents of annual events;
    - Project documents of annual events;
    - LAL annual reports;
    - Protocols of board meetings.
- Library science professional magazines "World of Libraries" ("*Bibliotēku Pasaule*"; 2003–2013 (at years 1994–1999 "*Es Daru Tā*"; at years 2000–2003 "*Bibliotēkas Pasaule*")) published by the Libraries Development Centre of National Library of Latvia.

By using qualitative content-analysis approach there have been created table of the attendance of LAL annual events (see table 1). In the table there are summarized the tendencies of statistical data reflection inaccuracies. There are bolded the most significant inaccuracies.

3 Results and discussion

In the research there are viewed and in the table are summarized in different resources available attendance data of LAL annual events. Summarization is divided in nine categories of information resources:

1 Events electronic application forms;
2 Events registration lists – lists with participants names and signs;
3 Events protocols – in annual meeting made decisions (at a short period after the reestablishment of LAL on annual events happened only members meeting and the review of the year);
4 Events reviews – including reports of annual events projects;

5 Events resolutions – decisions of annual events participants;
6 Letters about events resolutions sending – addressed to decision-making institutions, as an example, ministries and parliament;
7 LAL board meeting protocols – talks about happened annual event;
8 LAL annual reports;
9 Publications in professional magazines – authors are specialists from libraries most of them are from LAL and National Library of Latvia.

Statistical inaccuracies of LAL annual events create misleading impression about events attendance, and it is disinformation of information users – one of forms of the information disorder: "Disinformation is information that is false, and the person who is disseminating it knows it is false" (UNESCO, 2018, p. 46). The impact factors of disinformation are political, financing, psychological and social motivation (Wardle, 2018).

However, the attendance of events is not the main factor to evaluate its quality, but this statistical data provides possibility to make conclusions about in that time existing different external factors. Statistics helps to analyze the influence of these external factors to activities in community of librarians, as an example, how has been influenced the process of experience sharing and knowledge transferring between the professionals (especially related to librarians from rural areas). As possible cause of LAL annual events statistical inaccuracies here could mention issue of finances. It is possible that in the years when was inaccuracies (1996–2008) quality of events has been measured according to its attendance. In result of that in publications has been used disinformation with aim to receive finances, which was poor in every field and in country overall. However, chronological coverage of inaccuracies is very wide, and it includes also time, when in Latvia there was not so large-scale finance instability yet. As a reason here could be will of representation and the image creation.

The attendance of LAL annual events has been shown approximately quite often, but there are also more significant differences. As an example, in the year 2006 the number of participants at registration list is 259, but in publication at professional magazine there are shown almost 200 more – 450 participants. While studying different sources researcher comes along with such observations and it leads to conclusion about inaccuracies of secondary data. This situation makes necessity for primary data obtaining, but the time factor influences data collection (immediate problem) for researchers carried study. That way implements the principle of least effort – because of lack of time there are being used possibly inaccurate, but quickly accessible secondary data resources. It is also proved by researchers from Netherlands. They conclude that accessibility issues of primary data sources result in usage of easily accessible data (Gregory, Groth, Cousijn, Scharnhorst, & Wyatt, 2018).

Here arises the principle of least effort – creating reports and publications about annual events (secondary data resources) in concrete time there mostly are shown approximate data without rechecking and making sure about the truth. To others in future, this situation requires more and more investment of the work, and it creates issues with genuine and trustful data obtaining (searching, physical availability, possible loss of data, consumed resources).

4 Conclusion

In the result of this study, there is researched statistics (attendance) of LAL organized annual events and its reflection accuracies in reports and publications at professional magazines.

After the summarization and the analysis of statistical data, it is possible to conclude that there are visible inaccuracies at reflection of LAL annual events attendance. Mostly inaccuracies

were found at LAL made report documents and publications in professional magazines. Most notable differences of attendance have been in publications at magazine “World of Libraries”.

Statistical inaccuracies are periodic phenomena, which in the 30-year-long period since the reestablishment of LAL (1989–2018) mostly happened at the time from the year 1996 to 2008. Possible cause of the disinformation could be will of representation and factor of motivation to receive finances.

As the principle of least effort and its relevance with the least work provides, researchers should use trustful primary data as maximally as they can, because the content of primary data has not been influenced by so many external factors as secondary data and the possibility of disinformation is much lower. Primary data obtaining may consume lots of resources, but usage of them is very important for working out researches in social sciences.

Table

Table 1. Attendance of Library Association of Latvia annual events: reflection differences

Annual event		Number of participants								
Title	Year	Events electronic application forms	Events registration lists	Events protocols	Events reviews	Events resolutions	Letters about events resolutions sending	LAL board meeting protocols	LAL annual reports	Publications in professional magazines
19th Conference of Latvian Librarians	2018	258								
12th Congress of Latvian Librarians	2017	146	130							
18th Conference of Latvian Librarians	2016	195								
17th Conference of Latvian Librarians	2015	235								
11th Congress of Latvian Librarians	2014	264								
16th Conference of Latvian Librarians	2013				320					
15th Conference of Latvian Librarians	2012								200	
10th Congress of Latvian Librarians	2011			115*	>250					
14th Conference of Latvian Librarians	2010									
13th Conference of Library Association of Latvia	2009		76							
9th Congress of Library Association of Latvia	2008		256							370
12th Conference of Library Association of Latvia	2007		345				~300			
11th Conference of Library Association of Latvia	2006		259							450
8th Congress of Library Association of Latvia	2005		311		~350					>400; ~350
10th Conference of Library Association of Latvia	2004				360		420			
9th Conference of Library Association of Latvia	2003		257		>250					
7th Congress of Latvian Librarians	2002		196				~260			
Annual Conference of Library Association of Latvia	2001		196							
Annual Review Conference of Library Association of Latvia	2000		143							
6th Congress of Latvian Librarians	1999		204		~250					~240
1997 Year Review Conference of Library Association of Latvia	1998		232	222	~240	240		~240; 222		
Review Conference of Library Association of Latvia	1997		133						197	
5th Congress of Library Association of Latvia	1996		159	187**	~170					
Annual Conference of Library Association of Latvia	1995		86	82						
General meeting of Library Association of Latvia	1994									56
IV Congress of Latvian Librarians	1992									
General meeting Library Association of Latvia	1991		83							
Year meeting of Library Association of Latvia	1990									
III Congress of Latvian Librarians	1989			394						

* Participants of LAL members meeting

** Participants of LAL board members election

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The Transition of Contemporary Japanese Public Libraries from 1950-2019 through Plan Configuration Analysis

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Abstract. The purpose of this research is to illustrate the architectural characteristics and historical transition of Japanese public libraries. Library architecture literature and library plan configurations were analyzed to reveal the architectural transitions of libraries from 1950-2019. Firstly, we read the core literature of library architecture carefully and described the trends. Next, we conducted an analysis of 67 library plan configuration, that were randomly selected, from 1950-2019. We analyzed them from three aspects: external form, area, and space placement. As results, we identified four periods: (1)1945-1962, (2) 1963-1979, (3) 1980-Early 1990, and (4) Later 1990. Next, we successfully showed the characteristics of the library plan configuration in each period. Finally, we illustrated the transition of Contemporary Japanese Public Libraries from 1950-2019.

***Keywords*:** Public Library; Library Architecture; Plan configuration; Historical Analysis; Literature Analysis; Japan

1 Research Background

Globally, library buildings and spaces have rebuilt and renovated throughout the early 21st century. In Japan, particularly after World War II, libraries underwent significant architectural and design changes. Japanese public libraries are expected to play an essential role as a calming place and a place where people can gather and revitalize local communities (Tokoyoda, 2017). New types of library facilities that implemented these roles have been built one after another in Japan (Japan Library Association, 2018). Uematsu (2014) pointed out the transition is critical because it had been said in Japan that “library facilities are used for only stacks”. For instance, in recent years, the library functions of “space” and “place” have been prioritized, and libraries have become places where people can meet each other comfortably. A number of such library buildings can be seen in Japan now. The roles expected of libraries and the services that have been regarded as important have changed according to the patron’s needs, and the appearance and plan structure of libraries have changed as a result.

2 Previous research

Nishikawa (2010) discussed the transition of library architecture in Japan after the war because of the increasing social interest and demand for library facilities themselves.

There are several studies in Japan focusing on the library's plan configuration. Hattori et al. (1981) categorized the relationship between the theoretical flow of users and the arrangement of bookshelves and the layout of reading seats. Nakai (2007) reorganized the types of general reading rooms, children’s sections, reference sections, and counter placements in prefectural municipal libraries and clarified characteristics and differences in user behaviors among ages.

Haga et al. (2017) classified the areas in the library by function and by proportional changes of those areas over time.

3 Research Purpose

The purpose of this paper is to illustrate the architectural characteristics and historical transition of Japanese public libraries. In recent years, the need to visit libraries has decreased due to the Internet and the open-access of materials. In response, librarians and library scholars have tried to attract people to the physical spaces and discussed the legitimacy and efficacy of libraries in democratic society. In order to realize this, library architecture has highly prioritized spaces for meetings and discussions. This research has been conducted to clarify the architectural characteristics of library facilities, especially plan configurations, by collecting samples from all of the public libraries in Japan. This can contribute to the construction of new public libraries.

4 Methods

4.1 Plan Configuration Analysis with Library Architecture History

Library architecture literature and library plan configurations were analyzed to illustrate the architectural transitions of libraries from 1950-2019. Firstly, we read carefully about core literature of library architecture and described the trends.

Next, we analyzed library plan configurations. A total of 166 Japanese public libraries that satisfied any of the following conditions (i) to (iii) and whose detailed plan configurations were available were targeted. We analyzed the plan configurations of 67 libraries, which were randomly selected from these targeted libraries. Since (i) and (ii) are rare in cases before 1980, (iii) intends to add libraries that were important for library development even if not appreciated architecturally.

(i). Public libraries that won an architectural award (1985-2018) from the Japan Library Association (65 libraries)

(ii). Public libraries that were built between 1950 and 2019 and whose plan configuration was published in “New Architecture,” an architectural journal published since 1925. (97 libraries)

(iii). Public libraries that were built between 1950 and 1979 and whose plan configuration was published in “History of library architecture development: What produced remarkable development after World War II” written by Nishikawa (2010). (33 libraries)

(Note: The total number of libraries is not 166 due to excluding duplicates.)

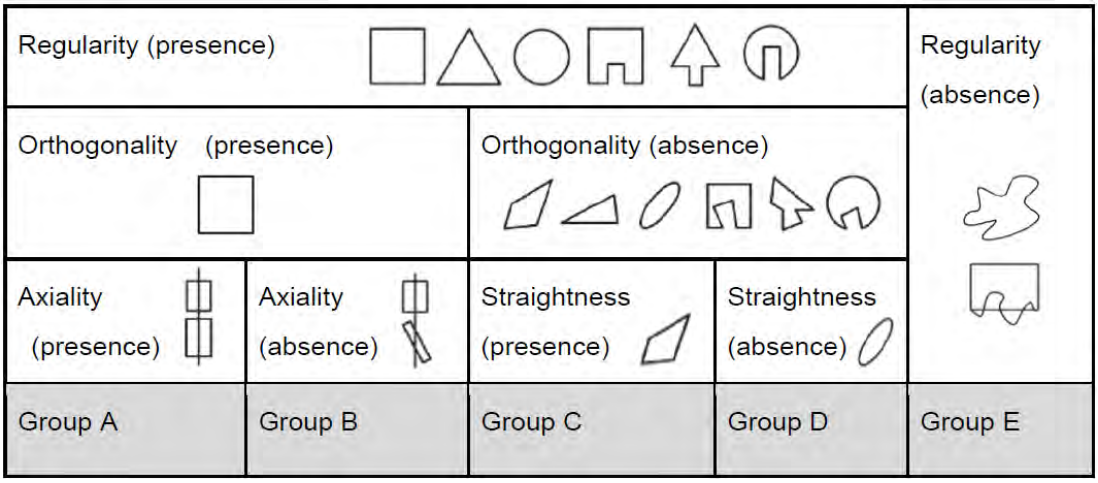
4.2 Analysis methods

Sixty-seventh libraries were analyzed from three aspects: external form, area, and space placement.

External Form

External form is defined as “boundary with the outside.” We classified libraries depending on the presence or absence of regularity, orthogonality, axiality and straightness (Table.1). If the library was in a combined facility, the external form of the entire facility was analyzed.

Table 1. Classification of external form depending on graphic elements



These elements are adopted from the analysis of the plan configurations of contemporary art museums by Machin& Almazan (2017).

Regularity: the external form is composed of only simple and basic geometric figures (e.g., square, triangle, circle).

Orthogonality: the external form is a quadrangle, such as a rectangle or square.

Axiality: the rectangles that form the external form are aligned in the same direction, or the external form is a single rectangle.

Straightness: the sides of the figure constituting the external form are straight lines or combination of triangles and squares.

Area

Space is classified based on function (Table 2), and the total floor area and the proportion of the total floor area was calculated for each function. The area measurement tool of Adobe Acrobat Reader DC was used for the calculation. Spaces that do not fall into one of the functional categories (e.g. boiler rooms, machine rooms, toilets, parking spaces, stairs, corridors, and warehouses) and spaces that could not be identified were excluded from measurement.

Table 2. Classification of space depending on function

Functional Classification	Examples
(1) Reading spaces	Open bookshelves, open storage, open bookshelves for children, AV materials, reference section, face-to-face reading, record appreciation, reading room
(2) Other spaces for users	Meeting room, study room, cafe, Japanese-style room, terrace for reading, exhibition room, smoking room, entrance, gallery, hall (including audiovisual hall), studio, research room, multi-use space
(3) Office and management spaces	Counter, office, working room, manager's room, reception room, Japanese-style room (for staff), break room (for staff), training room, conference room, space for volunteers, closed storage, working room for bookmobiles, storage for bookmobiles, storage (that are clearly not open)

Space Placement

The spaces were classified into the following space classifications 1-15 (Table 3) and given points (nodes). If possible, to travel back and forth between spaces, a line was drawn between the

nodes of the spaces (edges) and measured. A numerical value for each positional relationship was obtained based on the number of lines (edges).

We described the layout of each library in terms of how easily accessible the spaces are to users who enter the library from the entrance, using the number of edges to determine the shortest path from the entrance (No. 14) to each space. The index was calculated with the following formula. In the case of multiple doorways, an index was calculated for each doorway.

Table 3. Classification of spaces

Main Function	No.	Classification	Examples
Reading	1	Open bookshelf	Open bookshelf, Reading
	2	Newspaper / Magazine (browsing)	Newspaper, Magazine, Browsing
	3	AV material	AV, Local AV, AV equipment, Operation (AV), Music
	4	Children / Teenagers	Room for children, Storytelling room, picture book
	5	Reference	Reference (card catalogs), Local material, Reference room, Dictionary, Reference book
Office/ Management	6	Counter	Reception, Counter on open bookshelf space, Borrowing / Return counter
	7	Office / Management	Office, Reception room, Out of building service, Kitchen (for staff), Guard office, Manager's room, Conference room, Face-to-face reading
Usage (excluding reading)	8	Closed storage	Closed storage, Archive
	9	Study room	Study room, Group study room
Usage (excluding reading)	10	Meeting room	Meeting room, Hall, Kitchen (for user), Studio
	11	Cafe / Shop	Cafeteria, Shop
	12	Free space	Multi-space, courtyard, Local salon, Smoking, Japanese-style room, Terrace (for user), Rooftop
	13	Exhibition / Information	Local material exhibition
Others	14	Entrance (for users)	Entrance (excluding emergency exit), Lobby, Windbreak room
	15	Stairs / Elevator	Stairs, Elevator

(Index) = (minimum number of edges from the doorway to the space) / (average of the minimum number of edges from the doorway to all spaces)

5 Results

5.1 A study - 1945-1962

Historical analysis

After WWII, cultural policies by the U.S. occupation forces affected the development and dissemination of libraries in Japan. The Civil Information and Educational Section (CIE), which was in charge of public libraries, introduced 23 CIE libraries which installed the open stack system in 22 cities across Japan (Uematsu, 2014). In 1948, the National Diet Library was established. The Librarian Training Center of the Ministry of Education was established as a specialized education institution for librarians, and librarian courses and departments were

established at many universities. In April 1950, the Library Law was enacted, and concrete services in public libraries (free publication and proactive services for local residents) were documented for the first time.

Although the ideal library concept was implemented by the CIE libraries and expressed by the Japanese Library Act, it was difficult for Japanese municipalities to pursue the ideal due to the lack of resources during this period. For instance, there was a considerable shortage of specialized librarians, and there was a decrease in the overall budget and labor costs of prefectural libraries (Sato, 1961). In conclusion, there was a huge gap between the ideal situation outlined by the Japanese Library Act and the actual public libraries in the period from 1945-1962.

Library Architecture

User profiles in Japanese public libraries were very different from that of U.S. public libraries at that time. For instance, approximately 70-80% of users in Japanese public libraries were students (Sato, 1961). Librarians in Japan tried to prevent people who were not using the library collections (e.g., studying students) from bothering users trying to read by creating separate study rooms or separate reading rooms for adults. In order for children to make noise and not interfere with other users, it was common to place children's books and general books separately so that the children do not pass through the general section, or to provide special entrances for children. The Hachinohe City Library, which opened in 1960, was designed by the Japan Library Association Facility Committee based on these recommendations of the Library Act (Uematsu, 2014).

Most of the Japanese public libraries found in this era consisted of a reading room and a closed stack, which were mainly located in a “separate building” or “central building” (Nishikawa, 2010). The closed stack in a separate library building was often seen before the war, and because the stacks were located in a separate building from the main library, it had the advantage of being easily renovated as the collection increased. The reason why such an arrangement method was adopted was that the main premise of architecture at that time was for staff members to easily monitor the users. The counter desk was located between the library and the reading room, and there was a reception counter near the entrance to make it easier to monitor the users who use the materials and the students who enter the study room.

In the latter half of the 1950s, the number of libraries that partially adopted the open-stack system increased because of the user-oriented concept. However, many public libraries during this period still utilised a closed-stack system. Special procedures were still required for users to enter the book stacks in order for librarians to prevent book loss. In order for librarians to easily monitor users, it was said that the collection size should be limited to 10,000 books at most (Nishikawa, 2010).

5.2 Typical Lending Library: 1963-1979

Historical analysis

The most important event that occurred during this period was the publication of “Public Library Management in Small and Medium Cities” by the Japan Library

Association in 1963. The report illustrated fundamental rules of public libraries, such as (1) to promote outreach services and enhance library uses, (2) to develop a library network covering the whole local community, (3) to rearrange floor plans for a user-oriented open system, (4) to enhance book lending, (5) to prioritize services for children, (6) not to consider students as a primary user group. Due to these new rules for Japanese public libraries, book lending services outside of library buildings widely expanded, and lending became established as the main

service, which led to changes in library architecture and spaces to discourage student use in favor of use by regular citizens. This was a turning point for public libraries in Japan (Kurihara et al., 1988). The Hino City Library in Tokyo was the first city library to implement the new library concept in the report. It launched bookmobiles in 1965, and opened branch libraries in rural areas in 1966 (Uematsu, 2014). Public libraries could not keep up with the increasing citizen's demands during this period (Nishikawa, 2010).

Several architectural firms started to design a user-oriented library since the 1970s. In 1971, due to the long-range plan of the Tokyo metropolitan government, the government allocated a large amount of their annual budget to improve rural libraries. The standard of Japanese libraries has improved with this investment. Also, multiple accommodations for disabled people have been introduced to library designs.

Library Architecture

The architecture for a book lending-centric library, e.g., Hino City Library, was based on the idea of borrowing books and reading at home. The typical features were: (1) A welcoming outer appearance, (2) A bright interior with an unobstructed view, (3) Connected adult and children's shelves, (4) Children's shelves close to the entrance, (5) A few seats for reading, (6) Reference desk located in the back with reference books and local materials, (7) Information counter in a key location near the entrance, with an office behind it, and (8) No self-study room for students.

With the increase in the number of users and use by children with their mothers, a quiet atmosphere was no longer required. The children's room and reference room did not need to be separated. With the expansion of library collections, the management of a closed stack system has changed. Previously, library materials in the closed stacks and the control desk were closely placed. However, at this time when books numbered more than 50,000, open book shelves were used, minimizing the need to enter the closed stacks. The relationship between the reference desk and the closed stacks was prioritized (Sato & Nishikawa, 1974).

5.3Diverse Users' Needs and Library Services: 1980-Early1990

Historical analysis

The library construction did not stop even during fiscal austerity due to the second oil shock in 1979, and, in 1983, the number of new library buildings constructed exceeded 100. As the number of libraries increased, so did the scale and functionality. The reason for this was that users were able to go to libraries located some distance away due to the increase in private household cars, the introduction of media other than books, and computer-based business systems.

In 1986, the Japanese government, in the Second Report on Educational Reform, announced the introduction of a lifelong learning system into Japanese society, and the Lifelong Learning Promotion Act was promulgated in 1991. Through this, public libraries were prioritized as the most basic and important facility for lifelong learning in the local community. With the diversification of citizens' needs, the number of libraries in composite facility has increased (Nishikawa, 2010).

Library Architecture

During this period, the size and functionality of main libraries were increasing, and the large-scale libraries were designed for comfort to stay with the creation of audiovisual viewing booths and cafes where eating and drinking was possible (Uematsu, 2014). Because book lending was prioritized and users tended to read books in their own homes, the number of quiet reading rooms decreased in local libraries. Due to this, children's spaces and young adult spaces were

changed to run continuously with adult spaces (Kurihara, 1988). Also, with the increasing popularity of computers, card catalogs were no longer used. The spaces set aside for card catalogs were converted to spaces for computer rooms or computers for users. Due to the introduction of Book Detection Systems (BDS), librarians did not have to monitor library users as closely. In addition, disability services increased, such as face-to-face reading rooms for disabled people. In accordance with these trends during this period, braille books, audio materials, large print books, and enlarged reading devices became widespread in the Japanese library world.

5.4 Progress of ICT Services: Later 1990

Historical analysis

The Japanese economy had been booming from 1986 to 1991, but in the latter half of the 1990s, it fell into a long-term recession because of the collapse of the bubble economy. Due to this recession, some municipalities decided to reuse other buildings as library buildings (e.g., Tottori City Central Library, and Shimada City Shimada Library) which reappropriated a commercial facility from which tenants withdrew. Itako Library was established in a school building that was abandoned. It became a huge controversy in Japanese library world (Uematsu, 2014).

Library Architecture

The number of cases which renovated spaces for personal computer users increased in accordance with the increase of information, communication and technology (ICT) services. During this period, it was common for most public libraries to install several computers in front of a service counter in order to monitor users. At the same time, a new floor plan concept was created to distribute multimedia devices close to bookshelves in order to better provide multimedia for users.

Library architecture at this time typically consisted of a lobby, a meeting/training space, and external space. Uematsu (2014) stated that the meeting/training spaces should be located in a non-monitoring zone, and that these spaces should be clearly separated from the reading room. A lobby separating the reading room and meeting rooms is indispensable so that the meeting rooms can be used even after the libraries are closed.

The external space of this time differed from that of past libraries in that greenery was considered indispensable. Putting plants around the library can enrich the building's atmosphere, create shade, save energy, and absorb traffic noises from the outside. There were many cases where reading spaces were provided outdoors, but very few were actually used since Japanese people tend to prefer reading indoors. Courtyards and skylights were implemented to allow users to enjoy more natural lighting.

6 Plan Configuration

The following is an analysis from three perspectives (external form, area, and space placement) of the plan configurations of Japanese public libraries constructed between the post-war period **and 2018.**

6.1 External Form

All 67 libraries were classified into 5 groups, groups A to E. Group A (regularity, orthogonality, axiality) included the largest number of libraries with 26, followed by Group D (regularity, no orthogonality, no straightness) with 15, and Group E (no regularity) with 14. Because Groups B

(regularity, orthogonality, no axiality) and C (regularity, no orthogonality, straightness) consisted of a few libraries (4 and 8, respectively), they were excluded from this analysis.

Table 4. Classification of external form and open year

Year	Group A	Group B	Group C	Group D	Group E	Total (Libraries)
1950-1962	4 (80.0%)			1 (20.0%)		5
1963-1979	6 (46.2%)	1 (7.7%)	2 (15.4%)	3 (23.1%)	1 (7.7.%)	13
1980-1994	9 (39.1%)	1 (4.3%)	2 (8.7%)	5 (21.7%)	6 (26.1%)	23
1995-2018	7 (26.9%)	2 (7.7%)	4 (15.4%)	6 (23.1%)	7 (26.9%)	26
Total (Libraries)	26	4	8	15	14	67

The Group A library style has been built many times in all periods and can be said to be the basic shape of the library. In particular, all the cases (except the Tokyo Metropolitan Hibiya Library) belonging to group A were constructed in 1962, when the report was published. During this period, libraries composed of square shapes were generally constructed.

Group D consists of libraries composed of simple figures such as a rectangle, with the addition of an arc in the design. The number of cases in this group is almost evenly spread throughout each era. In addition, almost all spaces related to children (10 out of 16 libraries) used circles and arcs. Arcs were also used for assembly spaces (2 libraries) and open stacks (2 libraries).

Group E is the most complex group of the 5 groups with designs consisting of non-straight lines and non-arcs. Thirteen out of 14 libraries belonging to Group E were constructed after 1980. The exception is the Shimane Prefectural Library, which opened in 1968; due to the slightly complex shape of the wall near its entrance, this library was placed in Group E, but the design of the main library body can be allocated to Group A.

6.3 Area

When looking at the total floor area, most of the cases up to the 1980s were less than 3000 square meters (13 of 18 libraries opened in 1979 were less than 3000 square meters). On the other hand, since the 1980s, and especially since the latter half of the 1990s, large-scale libraries exceeding 10,000 square meters have increased. There are 9 libraries with a total floor area of over 10,000 square meters, of which 7 were built after the late 1990s. However, a constant number of small-scale libraries were built regardless of the era.

It should be noted that the total floor area described here is the floor area of the entire building based on the values described in the plan configuration data, and it was necessary to correct a part of the “total floor space of the library” value in order to determine the area proportions of each functional part of the building. For instance, correction was performed for libraries located in composite facilities, as only the floor space of the library was needed. In some floor plans, outdoor reading spaces or parking lots were excluded from the total floor space value, but because this analysis focused on (1) reading usage space, (2) other usage space, and (3) office/management space, outdoor reading spaces were included in our consideration of total floor space. Parking spaces were not included regardless of whether they were indoors or outdoors.

In the case where a part of the library was rented by another institution, we measured the area of the rented space in the same manner as that of the rest of the library, as long as it corresponded to the function shown in Table 2. Taking the above factors into consideration, the

total space in the library was divided by function, and the proportions of these areas were compared between cases.

As a result, in cases constructed between 1980 and the post-war period, 7 out of 19 libraries (about 36%) have “office and management spaces” accounting for more than 30% of the space in the building. However, since 1980, this proportion tended to decrease to about 10-27% in many cases. Exceptions to this trend include some large-scale reference libraries, such as the Fukushima Prefectural Library in 1984, the Yokohama Central Library in 1994, the Fukui Prefectural Library in 2003, etc., which have over 40% of their space dedicated to office and management spaces.

Also, during the book lending development period from 1963 to the first half of the 1980s, there were many cases in which the proportion of “multipurpose spaces” fell below 10% (17 out of 24 libraries). However, since the latter half of the 1980s, as the proportion of office spaces declined, there are many cases in which “multipurpose spaces” exceed 10% (26 out of 38 libraries), and even several cases close to 30% in this period. Each library has "multipurpose spaces", and such cases with “multipurpose spaces” reaching nearly 30% have increased.

6.4 Space Placement

The accessibility from the entrance to each space in the library is shown numerically. These values are given in multiples of the average value for all cases, and the larger the value, the less likely it is to pass through another space when going from the entrance, namely, the easier it is to access from the entrance. However, since the values are obtained from the adjacency of each space, the size and distance of the space were not considered.

Focusing on the distribution of large numbers that we identified through this analysis, it can be seen that the situation has changed since around 1990. From the 1950s to the 1980s, the main areas near the entrance were open shelves, browsing, children and adolescent sections, reference books, counter desks, and other places where users can access library materials, and there are many cases where the value is 4 or more. On the other hand, since the 1990s, the distribution of the large numbers has transitioned from spaces for using library materials to spaces for cafes and shops. High accessibility values for meeting rooms and free spaces were also seen in some cases. In such cases, the accessibility values for open shelves or spaces for children and adolescents are often only about 0-2, and spaces with functions other than those for the use and provision of materials are placed in locations that are easy for users to use.

7 Conclusion

First, library facilities and spaces have become more complex and diversified. From the results of the literature analysis, this is due to the diversification of library services or changing user needs, such as the diversity of media handled by libraries, and the use of computers by staff and users in accordance with the development of information technology. In addition to these changes, this research also revealed that people involved in library architecture and construction have diversified and that the degree of freedom in building design has increased.

As Nishikawa (2010) mentioned, since the 1970s, many architects have emerged as designers as a result of Japanese national government grants given to local municipalities, and designers’ preferences and skills have diversified. With the enactment of the PFI Law (Private Financial Initiative Law) in 1999, there were cases where private companies were involved in library policies and construction in cooperation with local governments. Moreover, the number of cases in which libraries are incorporated into composite facilities, and the number of people involved in library construction, are increasing.

It also became clear that the library facilities themselves are becoming more complex. Nishikawa, et al. (1974) said, “The shape of the space to be used should be as simple as possible.” At that time, the idea of placing the lending service at the center of the library services was at the forefront, and it was thought that a simple library facility design was good. When the libraries were grouped according to their outlines in the survey and analysis, the libraries built in earlier eras were often composed of simple figures, which supports this fact. However, there was a tendency for the proportion of buildings belonging to Group E (no regularity) to increase in the more recent eras. In this regard, Nemoto (2013) stated that library architecture shifted from “the only instrument that expressed library functions as they were” to something in which “architects are able to develop their own preferences.” The degree of freedom of design has increased.

Next, as the content of library services changed, so did the floor plan configuration. Before the report in 1963 was published, Japanese libraries were often used for studying without textbooks or reference books, and there was often a separate space created for students so that they would not interfere with general users. After the 1963 report was published, lending services have become more important, and studentonly spaces and closed stacks have decreased.

Sato & Nishikawa (1974) said that the open lending room should be designed so that it can be entered directly from the street, as though continuous with the outdoors, and the counter should be close to the entrance so that the loan return procedure can be facilitated, in such a way that the entire lending room can be seen. In fact, until around the 1980s, the space near the entrance of the library was often related to the reading of library materials, such as open stacks, browsing, and children and adolescent spaces. Although there are only a few examples of libraries in the wide-area reference library class, there are three possible types of library architecture at this time. In our data analysis, since the latter half of the 1970s, office / management space (closed library and office space) accounted for 30 to 40% of the library even though the scale is extremely large (total floor space is 9000 square meters or more) may be categorized as wide-area reference libraries.

However, in the cases from the 1990s onwards, cafes, shop spaces, and gathering spaces have been placed near the entrances and it has become clear that counters and bookshelves tend to be placed further away. When calculating the area of the spaces for non-browsing use, several characteristic cases in the latter half of the 1990s were found in which the area approached nearly 30% of the total floor area. In recent years, the role and effect of the library as a gathering place in Japan has been attracting attention, and this is reflected in the changes in space placement and area proportions.

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Truthfulness, Reliability and Accuracy of Information – Challenges Facing Contemporary Library Specialists

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Abstract. The saying "Unless it is on The Web, it doesn't exist" has become the 21st century disease. We have got used to receiving access to information with the click of a button. We often seek no alternative source, ignore the traditional places for access to information and forget about the consequences of multiplying fake data and facts. There are countless examples of fact discrepancies related to historical events and processes, which in an educational process would lead to the creation of fake concepts and conclusions; creating fake information through which one gains popularity, commercial success, fast profits, SEO, information theft and personal data, etc. The best way to verify information is to seek confirmation from an alternative source other than the Internet. And although libraries are in the background in the race for information storage, they are still one of the few knowledge institutions where one can find the way to truthful and reliable information. Here undoubtedly stands out the role of library information specialists who mediate between the stored knowledge and the specific demand of the user. The current paper aims to shed light on some of the challenges to services in contemporary libraries. It also strives to present different aspects of teaching and training future library and information specialists related to building of a rich information culture and capabilities of working with information in the right way.

***Keywords*:** Bulgaria, ULSIT, reliability of information, contemporary library specialists

„Libraries should be an inseparable part of the contemporary world, where technologies become more accessible and communication – more easily realized" Denchev et al. (2019)

1 Introduction

We live in a time where everything is just one click away. We get quick access to the information we need. And we rarely check its authenticity.

Traditional options for verifying the accuracy of the received information are ignored.

And right here, the position of libraries and library and information specialists, who are the intermediary between stored knowledge and the specific demand of the user, undoubtedly stands out. We use the word user because the term includes not only the notion of the traditional reader, but also the one who takes advantage of all the information services that modern libraries can provide.

Saunders et al. (2015) emphasize that the librarians are expected to be expert searchers of all kinds of information in all formats. [1] Developing the knowledge and skills to navigate the vast world of online and print information is typically a focus of most library and information science (LIS) programs. Libraries, as information, cultural and educational centers, have the daunting task to be a mediator between users and information resources, and to provide full democratic access to information, knowledge and culture based on the use of new technologies. [2]

Savova & Tsvetkova (2019) concluded that contemporary library and information sphere is unthinkable without active use of contemporary information and communication technologies. Digital and, in particular, mobile access to library and information resources and services is one of the key factors in relevant and quality fulfillment of various user needs in the conditions of modern global and information society. [3]

In the 21st century libraries in Bulgaria represent a synthesis between the traditional activities, they perform and the capabilities of new information technologies. From readers people become users of information, as a result of the changes caused by the new information and communication technologies. Denchev et al. (2019) found that libraries are the institutions that can respond adequately to present-day social needs and can engage actively in changing the world we live in. They are particularly responsible for a fair and equitable access to information and education for everyone. By providing mobile access to information resources and services, tailored to the individual needs of each reader, libraries perform one of their main functions - providing equal access to information resources, regardless of age, race, gender or social status. At the same time, they meet the current requirements of readers for a quick and with a maximum ease access to information. The interdependence between the interests of different members of society, the development of new policies and information provision services suggests sustainable development of both library institutions and the individual as well as that of contemporary society as a whole. [4]

The development of libraries as information centers is guided by the library's tasks to meet the readers' needs for information, to implement modern technologies and to provide new services that facilitate access to information resources, and more.

As a knowledge portal, today the library is a space where traditional sources of information and modern ICT exist at the same time. They are the guardian of knowledge and the information navigator. Atanasov (2019) found that ultimately library and librarians should change if they wish to be adequate to the new reality of an information boom, in which our mind is daily attacked with data from all sorts of sources: radio, TV, but especially the Internet – websites, social networks, video channels, and so on. In this new environment, the flow of information that bombards us contains overwhelming untruths, false facts, speculative theories, blatant lies and manipulations. All of them are offered to us in the easiest and most accessible way. They are read by millions; they are commented and, in the end, there is a danger of them being accepted as true. A real paradox is that people can easily and effortlessly reach fake ‘information’ on the Internet. At the same time, real information – the one stored in archives, libraries and museums – remains either hard to access or is missing on the net. Access to it requires enormous efforts, time and resources, and so it remains known to a very small group of people lost against the background of the vast majority whose worldview is formed by controversial or clearly untrue facts and interpretations. [5]

2 Libraries as Partners

And although libraries are in the background in the race for a source of information, they are still one of the few knowledge institutions where the way to credible and reliable information can be found. Savova & Tsvetkova (2019) emphasize that the modern world is unthinkable without information and communication technologies. With the limitless opportunities that they provide to humanity today for access to information and knowledge, the pace of development of modern society is determined. Transformations that have occurred in the information age have brought enormous challenges to human development, changing its information and educational needs. [3]

Of particular importance in the times we are living and are literally flooded with information is to build different competences, including information ones. To build the knowledge and skills needed to correctly identify information, to effectively search and organize information. To learn to analyze and interpret the information found and to evaluate its accuracy and reliability, to distinguish the true from the false. When the mass market of education emerged at the beginning of the nineteenth century, the result could be only one – a new specialization of intellectual labor. The ways in which we organize our intellectual activity determine the ways in which we create new knowledge and use it in our everyday life. Libraries are a natural partner in these processes, related to the formation and development of information literacy and information competence.

In modern information society digital, information and communication literacy are considered basic skills for the formation and development of every socially active and successful citizen, while information and communication technologies play a key role in both educational and information provision and in any their sphere of social life.

Bawden & Robinson (2012) found that digital literacy refers to the ability to use information effectively, in all formats, in a largely digital information environment. Its central theme is the ability to synthesize and integrate information from varied sources. This is a vital "life skill" for everyone today. The promotion of digital literacy in all environments is an important task for librarians and information specialists. A wide variety of methods has been used for training, teaching, and promoting digital literacy. To a large extent, they follow on from "user education" or "bibliographic instruction" in library settings. [6]

Complicating the information needs of users requires the creation of a new type of library and a new type of librarians – able to organize, store and provide their users with the human knowledge. Not only today's user needs to borrow a book or to make an inquiry, but he already needs to find and to use reliable information, to rely on a multifaceted search method. In recent years, in various plans and programs, libraries in Bulgaria have been considered as educational, cultural and social institutions, that play a key role in providing open and free access to information.

Libraries are modern information institutions providing information services, based on the Internet and on the basis of integrated library information systems. Based on information technologies, libraries provide information without space or language limits.

Encheva et al. (2019) emphasize that the development of new technologies has led to dynamic transformations in libraries. In order to be competitive and to effectively perform their role of cultural and educational centers, libraries have had to transform the services they offer. The most important changes in the library environment are related to the proliferation of the number and variety of electronic resources. [7]

The modern library is the one that provides full access to information to the widest possible range of users and works to meet their needs while maintaining its role as a social, educational, cultural and information center. Library specialists need to acquire new functions related to the management of their professional knowledge, skills to socialize and tacit knowledge, and to create an appropriate infrastructure for the storage and the use of intellectual capital.

3 Library information specialist = Knowledge worker

In the global world, technology is no longer a competitive enough advantage. With our entry into the knowledge economy and the Internet, radical changes have taken place in all areas of society. Knowledge is integrated into every aspect of modern society. Work and employment projects in the XXI century predict that the volume of employment opportunities will increase in the area of "knowledge-related activities", which includes a wide range of services. These

activities require highly professional qualification and continuous improvement; mental flexibility, emotional intelligence, willingness to accept new ideas, ability to show and prove the validity of results, etc. In today's society, it is difficult to distinguish between “people of knowledge” and “people not working with knowledge”, so some researchers focus more on the ability to absorb knowledge than to work with knowledge.

In and knowledge-based society, one of the most valuable qualities of employees in the mental work. Davenport (2005) found that knowledge workers are workers whose main capital is knowledge. [8] Examples include specialist; whose line of work requires one to “think for a living”. This is the knowledge worker, i.e., the man that creates and owns knowledge, and capable of using it. The term “knowledge worker” was first coined by Peter Drucker in his book, The Landmarks of Tomorrow (1959). Drucker defined knowledge workers as high-level workers who apply theoretical and analytical knowledge, acquired through formal training, to develop products and services. He noted that knowledge workers would be the most valuable assets of a 21st-century organization because of their high level of productivity and creativity. They include professionals in information technology fields, such as programmers, web designers, system analysts, technical writers, and researchers. Knowledge workers are also comprised of pharmacists, public accountants, engineers, architects, lawyers, physicians, scientists, financial analysts, and design thinkers. One of the most persistent figures in this group is the library specialist as his knowledge determines the attitude towards the library. [9]

As knowledge workers, they have specific knowledge and, thanks to their skills and habits, are able to find the most accurate and demanding source of information. In the knowledge society, new requirements for their professional competence are being imposed. According to individual recommendations and requirements, prepared by the various world library associations and organizations, library professionals should work to develop their information skills and competencies in the directions of:

- have expert knowledge in the content of information resources;
- search and have the ability to critically evaluate and chose them, taking into account the needs and issues of users;
- to be a correct information navigator and facilitator of the system of documentary communications, traditional and electronic;
- provide good instructions, materials and help for users of library and information services;
- support the processes related to the assimilation of the information culture;
- to be prepared to work at the necessary level in the field of social communications and technologies;
- develop skills to work with very different type of users;
- support the process of formulating specific searches for library services users;
- enrich the databases with verifies and current information sources;
- to be competent in the planning and teaching of different techniques for the utilize of information for users;
- work to create accessible ways for the development and enrichment of resources and services;
- develop and support users’ information literacy;
- use appropriate information technologies, in order to obtain, organize and disseminate information;
- develop specialized information products and services for users utilize, both inside and outside the library, etc.

In our daily activity in huge information flows, the information specialist is the one who should make the information accessible to users. This information should be available and user-friendly in an environment of large dissemination of false information. It is quite difficult to judge to what extent the information on the Internet is reliable and whether consumers are aware of the possibility of being misled by false one.

The deep, dynamic and comprehensive changes in recent decades have influenced the vision and the organization of libraries, and the library profession as a whole, drawing on the new characteristics of a successful XXI librarian. Modern concepts set requirements for multiple communication skills and approaches to communication, knowledge management and access to knowledge.

Today, when the new technologies are constantly being developed and offered, library professionals should not be constantly enriching their own knowledge. To become a specialist familiar with the new technologies, constantly monitoring professional achievements internationally and with a clear idea of the needs of society. Not only does the librarian need to collect, process and disseminate information, he must be his competent user, and to respond appropriately to the new requirements that constantly changing times require.

This is because new technologies are changing the ability to use libraries, but they are also changing the requirements for librarians and their activities.

4 The library – the navigator in the information environment

Eftimova et al. (2019) emphasize that today more than ever it is necessary to work towards becoming aware of the role and place of libraries as the most democratic institutions providing free access to information for all by working to promote and maximize the capacity of libraries to support the socialization of disadvantaged people in our country. [2]

With the widespread use of the Internet over the last decade, libraries have lost their absolute priority in the field of information security and are forced to look for new forms of service using modern information technology. The trend towards increasing the use of electronic library and digital collections and lowering the use of traditional library services and resources is well known. Librarians should redirect their work to creative solutions for the use of digital collections in close cooperation with subject fields specialists and IT specialists as library users will thus save time to find the materials they need and gain new knowledge.

Today's library needs to strengthen its place as a navigator in the information ocean, enhancing its capacity to handle the vast amount of information and ever-increasing complexity and requirements. To be able to ensure its effective use and to continue to be the organizer of world knowledge.

Among the different theses about libraries and the reliability of information should not be neglected the one that nowadays, the library starts to be responsible only for the authenticity of the source of the information, without guaranteeing the authenticity of the information itself. [10]

In the new information society, we all live in, libraries, archives, museums and other institutions of memory will undoubtedly continue to be the main guardians of memory and material evidence of the past. As H. Atanasov (2019) says as with the development of ICT, their role as a creator of true information on the Internet will undoubtedly be strengthened and expanded. It is clear that there are too many websites, blogs and other products on the web that essentially offer their users untrue and manipulative data and facts. In this sense, institutions of memory are set to be an important guarantee for real-world information to be available on the web. [5]

5 Instead of "Conclusion"

Since its inception until today, the library has undergone through various transformations and assumed different roles and functions. If initially its primary function was to store books and documents, today it has a much more responsible mission. The specific socio-cultural situation determines the priority of a certain function under specific historical conditions. The functions themselves do not change, but their content, which is directly related to changes in the social role of libraries.

As a social institute, the library creates the need for the emergence and development of library pedagogy. Many of the basic functions of the library, such as educational, information, cultural, etc., are also offered by other organizations. But the library is the only one dedicated entirely to the purpose of collecting, provision and assurance the widest and most accessible information for the whole community. This means that the modern library must be able to meet the diverse educational and research information needs of its users and be actively involved in the scientific communication process in order to facilitate lifelong learning and continuous educational progress.

The library environment allows quick and easy access to the needed information without setting specific requirements and expectations. This environment is informationally and culturally rich and allows reaching certain knowledge and skills in an informal environment.

This is a place where everyone sets their own pace of work, their own strategy for searching and synthesizing information, and the reader himself chooses his sources and the way to use them.

The rich and varied form of access to information provokes readers' interest and enables them to have a broader and more complete picture of specific areas of life. That is why it is important for the library to provide the most accessible and attractive forms for presenting the wealth of its fund.

The Web has become a universal tool for searching and finding information, but its use must be done with care and reasonable!

Just as it cuts roads, so does open gaps!

The formation of a global information space has its pros and cons! The traditional forms of creating and working with information over the centuries must not be forgotten, as they carry a value system that must be valid and respected today!

To work in the direction of creation, and not blind reproduction!

To preserve the value of thinking, creating and building knowledge!

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Twitter: relay of validated information, but also of rumors - two examples of analysis in the health field

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Abstract. The transition to Web 2.0 has been characterized by a multiplication of forms of communication for the citizen. He can now easily share his personal opinions online, on Tweeter or Facebook. This advent had positive repercussions in the health field because it favored the participation of the citizen in his own life and his own well-being. However, it has also had negative repercussions because social media has become the relay of false information and rumors, especially during outbreaks. This article presents two examples of these repercussions through two studies conducted on tweeter. The first study analyzed the 20/05/2019 and on the period from 02/06/2019 to 30/06/2019, via Radarly® software, the tweets concerning the problem of drug use with a filter on the French language and incorporating the hashtag #cocaine and the hashtag #heroin. The selected tweets confirmed that the majority of the publications relayed press articles, particularly of a scientific and educational nature. It was highlighted that the media tweeter played a role of relay and sounding board, in particular of messages of prevention and sensitization. The second study also analyzed via the Radarly® software the tweets posted on Tweeter over a period from 01/04/2019 to 07/07/2019 and concerning the problem of Ebola disease which has been raging since 01/08 / 2018 in the Democratic Republic of Congo. In this study, the keywords Ebola and the hashtag #Ebola were used, with a filter on the French language. This study revealed that part of the Congolese population communicating on the social network thought that the disease was a kind of conspiracy to destabilize the country. This part of the population spreads rumor and false information on this media. However, these two studies suffer from bias, in particular short periods of analysis and the choice to limit themselves to the French language.

Keywords: tweeter; rumor; validated information; Ebola; drug

1 Introduction

The communication of organizations and citizens has been disrupted by the Web 2.0 revolution [1]. Many activities in the private and public spheres, in particular in thepolitical sphere, were completely upset.

The first affected by this upheaval are the citizens who can now communicate with each other, with the media and politicians on the web in an almost instantaneous manner [2].

The field of health is indeed "the" field where web 2.0 has participated in new social and technical paradigms [3]. The patient-citizen is no longer content to read, to write. He produces and communicates health information on the Internet (Silber, 2009). Today, he's the vector of new medical practices that have emerged a new paradigm: the health 2.0. With this upheaval, new forms of communication and sharing of medical knowledge have been created, particularly concerning health debates [4].

This transition to the upheaval of health 2.0 has thus been characterized by a consequent multiplication of forms of communication by and for the patient-citizen. He can now easily put

his personal opinions online on his own site, on tweeter or on Facebook. He can also communicate on the web in the form of associations (users, consumers, etc.) [5, 6, 7]. This advent of health 2.0 thus opened a new era: "e-democracy" [8].

This new time has had positive repercussions in the health field because it has favored the participation of the citizen on social networks in his own life and his own well-being [8]. However, it has also had negative repercussions because social mediahas become the relay of false information and rumors, especially during outbreaks [9].

This article presents two examples of these repercussions through two studies conducted on tweeter. The first study analyzed, using the hashtag #cocaine and #heroin, the tweets concerning the problem of injecting drugs posted on tweeter on 05/20/2019, then over a period from 02/06/2019 to 06/06/2019. This study permits to identify the actors who intervene on the social network and their messages. The second study analyzed, using the keyword Ebola and #Ebola, via the same software, the tweets posted over a period from 01/04/2019 to 07/07/2019 concerning the Ebola epidemic thatis raging currently in the Democratic Republic of Congo (DRC). The study made it possible to identify the actors who express themselves on this disease, as well as the messages conveyed and the false information relayed.

2 Methodology

To conduct the two studies presented in this article, we used the Radarly® social media monitoring software developed by the company Linkfluence (https://radarly.linkfluence.com/login) and operating in SAAS mode (Figure 1). This software, available online on subscriptions, allows to collect data and monitor the social web (Twitter, Facebook, Instagram, forums, blogs, etc.).

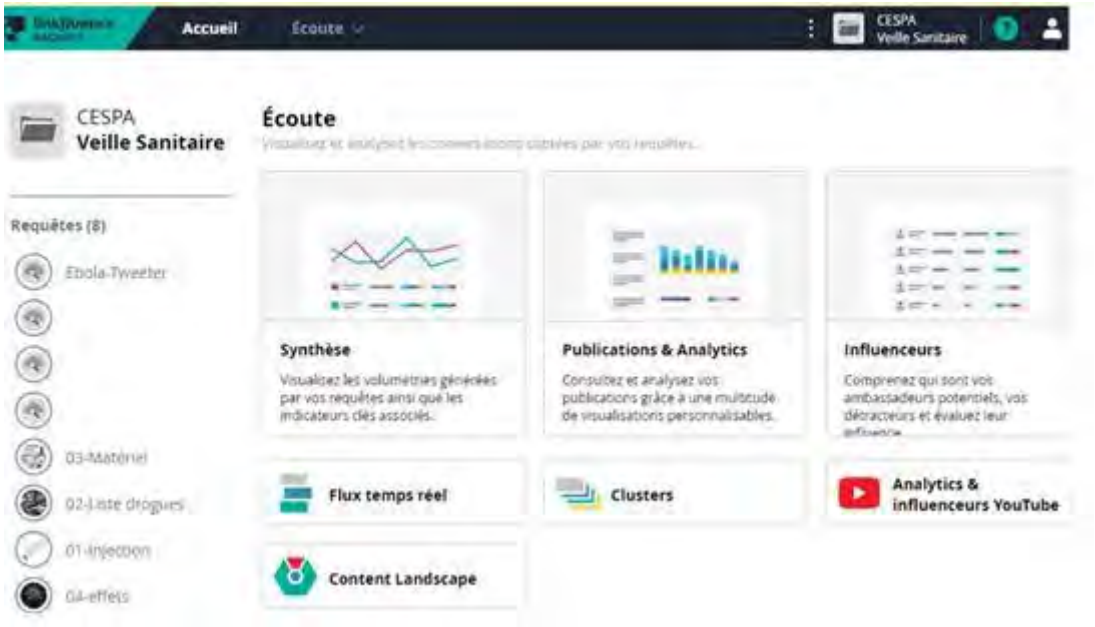


Fig. 1. Radarly® Interface

The tool makes it possible to represent graphically and cartographically the results, in particular in the form of clusters of dominant subjects. It also analyzes the tone of published messages. It makes it possible to identify the influencers (people or groups who intervene or speak on a subject or theme). It also makes it possible to exportdata in .csv format which can be processed statistically (Figure 2).

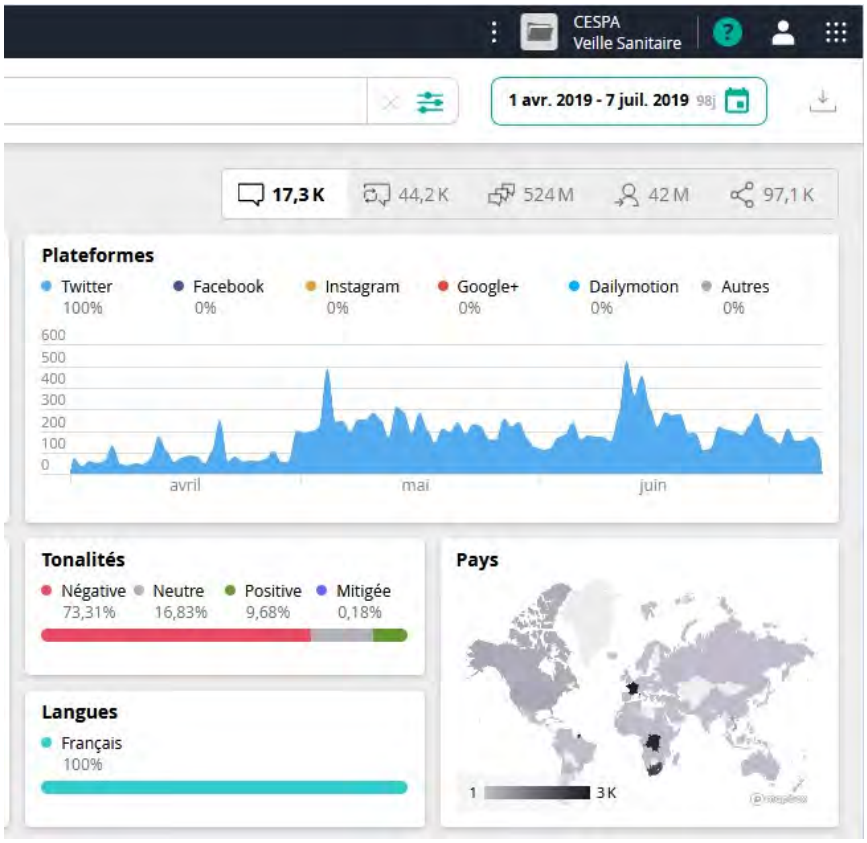


Fig. 2. Graphical representations of Radarly® results

To collect data from Radarly®, we applied the monitoring process and themethodology (Figure 3) developed by Tanti in his article entitled "Exploiting the knowledge organization of Health 2.0 to create strategic value in public health - An example of application to the problem of Drug Consumption Rooms in France "[10] andwhich includes 6 steps: definition of monitoring themes, identification, collection, analysis, synthesis and dissemination of documents.

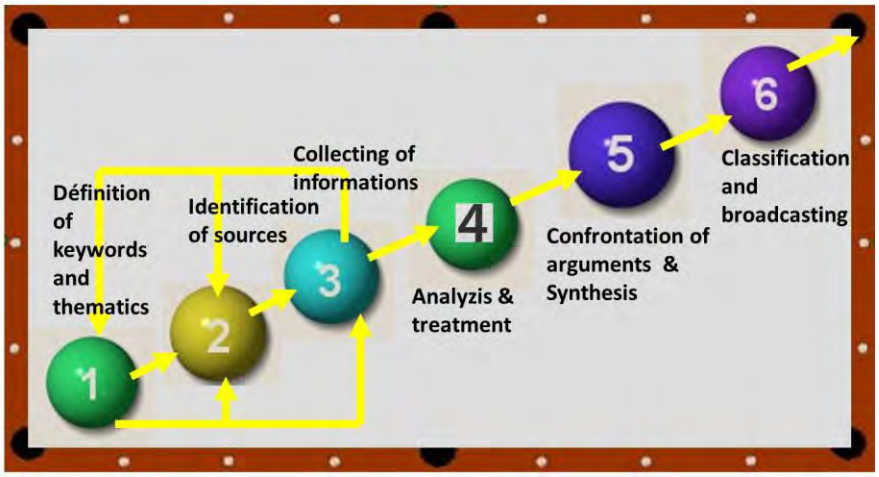


Fig. 3. Monitoring process (from Tanti, 2016)

Concerning the first stage of definition of the topics of the surveillance, various key words of research, hashtag # or formulations are defined according to the studies.
Concerning the second and third stages (identification and selection of documentary sources), we have only collected tweets on the social network tweeter via the Radarly® platform.

Concerning the analysis stage, it was notably possible with multiple analysis and cartographic representation features of Radarly®.

3 First study

This study analyzed, from the hashtag #cocaine and #heroin, the tweets concerning the problem of injecting drugs posted on tweeter on 05/20/2019, then overa period going from 02/06/2019 to 06 / 06/2019. A filter on the French language was operated to select only the tweets written in French. The tweets collected were classifiedand categorized via the software. The requests made it possible to identify the actors who intervene on the social network Twitter and who tackle the problem of drug use, as well as the messages conveyed.

3.1 Analysis performed with the hashtag #heroin the 05/20/2019

The first exploratory analysis carried out on 05/20/2019 targeted only French publications incorporating the hashtag #heroin. This query generated 47 publications. Ten of them did not refer to the subject studied and were not selected. Of the 37 remaining publications, there is a great heterogeneity of speakers with a significant propensity of institutional organizations and press media (40%). We also identify political figures, scientists and various actors (Figure 4).

Government institutions:
DEA New England, DEA Chicago, DCI Kenya.

Non-Governmental Organization:
Medical Society NY.

Press / news sites:
Daily Herald, NDEWS, El Universal, Dolomiten, News Moto, Virakesari,Thamil Lanka, Thinakaran News 8, Never Sleeps Network and a reporter.

Other users:
Among the fourteen individuals identified, note the presence of two drug users, a lawyer specializing in criminology, a researcher and a physicist.

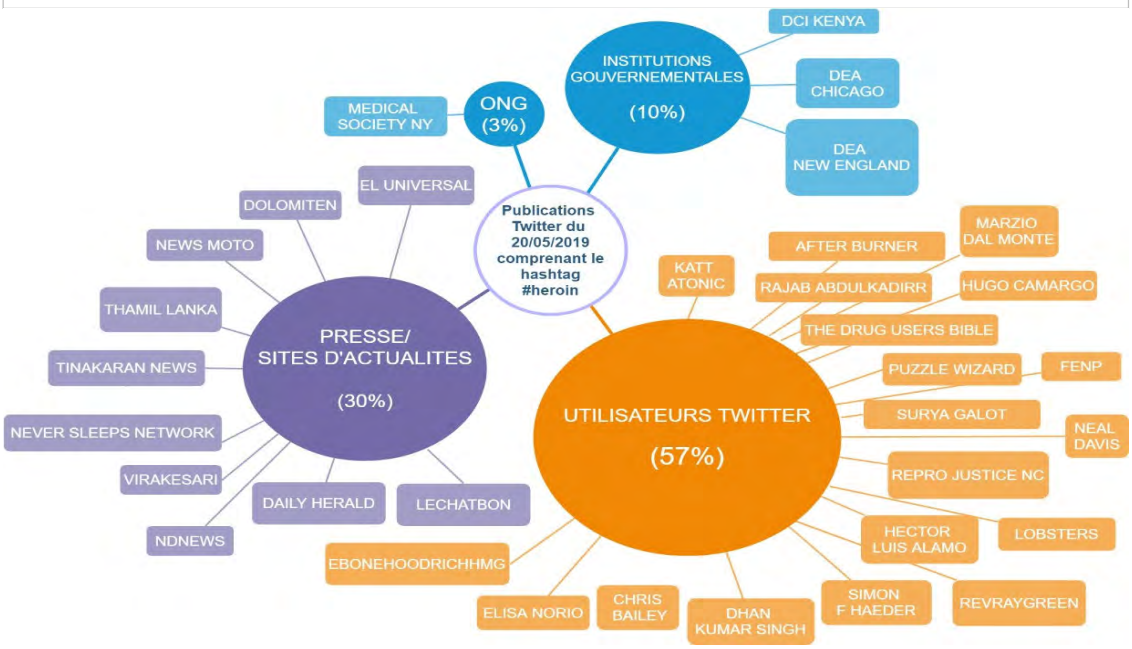


Fig 4. Distribution of actors mentioning the hashtag #heroin in their publications (Twitter - 05/20/2019 - 37 Tweets).

3.2 Analysis carried out from 02/06/2019 to 06/06/2019 with the hashtag #cocaine

The second study extending from 02/06/2019 to 06/06/2019 targeted only French publications incorporating the hashtag #cocaine. The 30 tweets were selected.Most of the publications relay news and press articles. Press organizations andjournalists thus represent 60% of all the actors identified (Figure 5). Health professionals, present up to 7%, disseminate scientific information and share the results of validated scientific studies conducted by specialized organizations.

Press / news sites:
La Voix Du Nord, Euronews FR, Lighthouse of various facts, Memento, Inu Mag Info, Actu World, L'Essor, La 1ère, Le journal de Vitré, Latest News from Alsace, La Voix Du Nord Lille, Tahiti Nuit Television, a journalist working for Ouest-France and another for 24 Matins.

Other users:
Among these 12 users, we note the presence of a doctor working in a help center, an addictologist, a municipal councilor / teacher, a member of the SOS Addictions association or a literary critic site that promotes a book on the world of drugs.

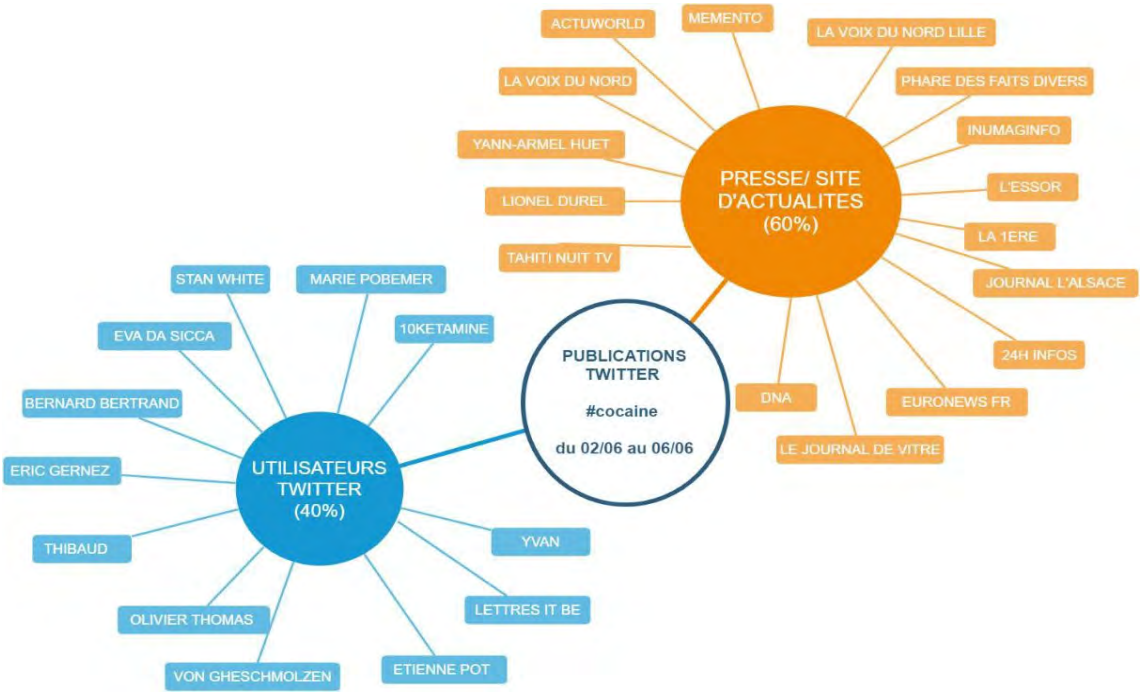


Fig. 5. French publications distribution with the hashtag #cocaine (Twitter from 02/06/2019 to 06/06/2019. 30 Tweets)

Fig. 6. Tweet of the 05/06/2019

In this analysis, we can also note that Twitter is a space of expression with an asserted political dimension where the citizen and militant organizations can expressand share on the issue of drug use, representing here 40% of the actors identified. Among the tweets collected, there are several publications of critical nature written by citizens or associations. For example, on 06/05/2019, a member of the SOS Addictions association pointed out an error present in an article from La Provence, published on the occasion of the experimental opening of a drug consumption room in Marseille (Figure 6).

3.3 Conclusion of the two analyzes

These two problems analysis of injection and drug use lead to the conclusion that most of Tweeter's publications disseminate and share press articles, particularly of scientific and educational nature. It is also highlighted that this social media plays a role of relay and sounding board, in particular of messages of prevention and awareness concerning this issue. The press organizations, journalists, professionals and health organizations represent the majority of the actors present. They disseminate scientific information and share validated study results, thereby promoting the dissemination of scientific and technical information. Citizens and associations can also express and share, in particular to criticize, denounce or relay current events, controversies or debates on the subject.

4 Second study

The second study analyzed via the Radarly® software the tweets posted on Tweeter over a period going from 01/04/2019 to 07/07/2019 concerning the problem of Ebola disease which has been raging since 01/08/2018 in the Republic Democratic of Congo (DRC) and which has made more than 2000 dead. A filter on the Frenchlanguage was operated to select only the tweets written in French. In this study, the keywords Ebola and #Ebola were used in the query, with a filter on the French language. Seventeen thousand two hundred and eighty-two tweets were collected, classified and categorized via the software.
The requests thus made it possible to identify the actors who express themselves on this disease on the social network, as well as the messages conveyed.
The main players in the publications found are:

- **The general public, mainly Congolese citizens and associations:** Association Congo Check…
- **Politicians,** Congolese, regional, continental and international…
- **Scientists, experts, health organizations** (Ministry of Health of the Congo, WHO, etc.)
- **Journalists**, press, media, mainly Congolese…

4.1 General Public

It’s mainly Congolese citizens and associations who express on the epidemic on the social network. In the Congolese population, there are two currents: those who believe and those who don’t believe in the existence of the disease. Opinions are shared one party accepts the disease as a real epidemic and a real public health problem. It adheres to the medical treatment offered and to preventive measures. It relays scientific information… For example, the Association Congo Check relays information published by the Congolese Ministry of Health concerning prevention and safety measures and it fights against fake- News (Figure 7).

Fig. 7. Tweet from the Congo Check Association to fight fake news

Another part of the Congolese population speaking on the social network denies the disease and considers it a kind of conspiracy to destabilize the country. This population in particular spreads rumor. It accuses, for example, multinationals or Westerners of injecting the virus in order to destabilize the country, to decimate the population in order to seize the wealth of the country (Figures 8).

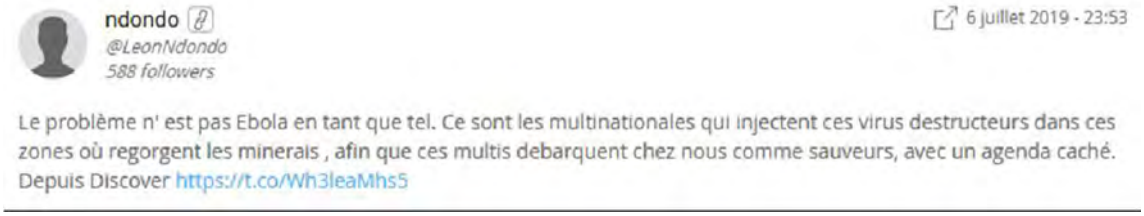


Fig. 8. Tweet from a Congolese man accusing multinationals

4.2 Politicians

Mainly Congolese politicians speak out. Some relay the prevention messages show the example and communicate on treatments, scientific information, and education messages (Figure 9).

Fig. 9. Tweets showing a minister for his vaccination

Others politicize the epidemic for electoral purposes, in particular in December 2018, during which the Independent National Electoral Commission (CENI) announced that the inhabitants of the cities of Butembo and Beni (cities favorable to the opposition, and epicenters could not vote because of, among other things, the "persistence of the Ebola virus epidemic".

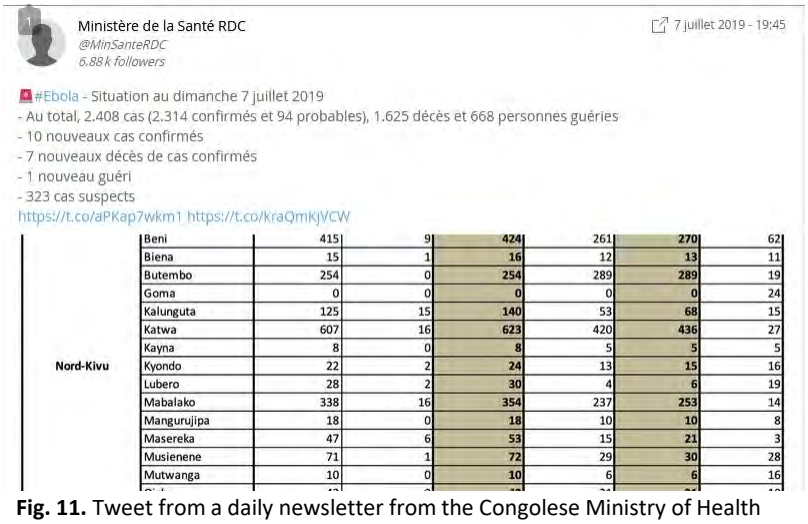
4.3 Journalists

Journalists and the press media, both Congolese and international, expressthemselves on social media. They tend to share WHO response releases, WHO prevention and awareness messages (Figure 10).

Fig. 10. Tweet from media relaying a prevention message

Scientists and Experts

It was mainly the national and international health authorities and health organizations responsible for the response to the disease who spoke on tweeter during the study period. In particular, we observed that they shared many tweets to inform the general public. For example, the Ministry of Health of the DRC made a daily update on the disease (Figure 11).



Nord-Kivu	Beni	415	9	424	261	270	62
	Biena	15	1	16	12	13	11
	Butembo	254	0	254	289	289	19
	Goma	0	0	0	0	0	24
	Kalunguta	125	15	140	53	68	15
	Katwa	607	16	623	420	436	27
	Kayna	8	0	8	5	5	5
	Kyondo	22	2	24	13	15	16
	Lubero	28	2	30	4	6	19
	Mabalako	338	16	354	237	253	14
	Mangurujipa	18	0	18	10	10	8
	Masereka	47	6	53	15	21	3
	Musienene	71	1	72	29	30	28
	Mutwanga	10	0	10	6	6	16

Fig. 11. Tweet from a daily newsletter from the Congolese Ministry of Health

5 Conclusion

Our two studies present two examples of the social impact of tweeter. As partof the first analysis on drug injection practices, as in the second analysis of the 2018-2019 Ebola epidemic, this social media allows the relay of prevention messages and the sharing of validated scientific

information. However, this media can also have negative social repercussions, as in our second analysis, when it relayed and propagated false information and rumors. The studies presented suffer from bias, in particular short periods of analysis and the choice to limit to the French language. But above all the choice of analysis only on the social network Twitter can raise questions. Indeed, this media limits the number of characters present in messages. It thus limits long discussions, making it therefore the relay of current events and the engine of polemics and debates rather than the federator of micro-communities.

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Types of Fake News During the 2019 Election Campaign in Poland

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Abstract. In this paper, the authors show the impact of fake news on Polish citizens during the campaign preceding the parliamentary elections of 2019. The most popular fake news has been selected. The authors proposed the typology and also enriched the paper with illustrations and interpretation of identified fake news.
Research methods such as observation method, document analysis method and individual case method were used in this work. The paper answers the questions: What are the most popular schemes of creating fake news? In what way is fake news created and shared? What is the social influence of them?
In conclusion, the reactions of citizens and the effects of published fake information were described, as well as the harmfulness of fake news in the electoral campaign.

Keywords: campaign; fake news; Poland

1 Introduction

According to the international experience, we may observe a multicontextual relation between the influence of social media and election season in the United States of America or Russia [4]. Social websites and networks or mobile apps do not hinder sharing myths, fear, misinformation, propaganda, hatred. Thanks to anonymity – it is difficult to reach the source of gossip, or to get to know the name of the sender or forwarder [1].

Since 2016 the growing number of publications about fake news has revealed a wide range of problems connected with intentional disinformation. Especially in countries whose citizens have a wide access to the modern technologies based on social mechanisms, we may observe a growing influence of fake news' authors on the political, economic, environmental or healthcare opinions and decisions of audiences. In social media we often do not check who posts a comment, but only what he or she says [2].

2 Methodology

The aim of the research was to analyze the fake news related to the electoral campaign in Poland in 2019 which started on September 3rd and finished on October 13th. To collect the data the current analysis of Polish information websites was conducted. The fake news was also acquired from the most important Polish fact-checking websites (anty-fakt.pl, sprawdzam.afp.com, antyfake.pl). In the research 11 fake news items have been identified. They have been interpreted basing on collected information about them. It allowed the authors to indicate their types. During the interpretation following categories were taken into consideration.

The category of the *date* allowed us to put gathered news on a timeline to assess the frequency of their publication. The analysis of *source* helped to indicate the most popular locations where fake news were published. The third category used in the analysis of fake news was *type*. Another category taken into consideration was *theme*. The fake news was also interpreted with regard to observed *mechanism* of functioning, *harmfulness*, identified *reactions* and supposed *results*.

3 Findings

The analysis showed that fake news were published with various frequencies. In September, only three of them were released. The rest (8) was published in October, most often in the middle of the campaign.

Seventy-three percent of all analyzed content was published in social media (Facebook). Eighteen percent appeared in newspapers and only 9% on the radio. The authors did not interpret the fake news available on TV, due to the non-archival nature of this medium.

Depending on the type, we may indicate, basing on literature, 4 types of fake news (Fig. 1). The most popular types were fake news with *fabricated content* (4) and *false context* (4). Also, the news with *manipulated content* (2) and *imposter content* (1) [3] were identified.

Fig. 1. Number and types of fake news observed during research

Most of fake news (7) concerned Polish right-wing political party called Law and Justice. Three fake news pertained to the left-wing political party named Citizens' Coalition. Only 1 fake news was about general political situation.

The mechanisms of researched fake news varied. The manipulated information was related to Citizens' Coalition logo placed on voting cards, which might be misinterpreted by voters. The photo attached to the news suggested ticking in a wrong place on the voting cards. During the campaign, media and Internet users discovered that one of the Law and Justice candidates used several election posters with fake information about her constituency. Another fake news distributed gossip about the possibility of voting online on the official radio website. A week before the end of the election campaign on the Internet a short video clip with the leader of the right-wing party was published, saying "Voting for Citizens' Coalition, you help each other, you help Poland", which was an obvious slip of the tongue used by the left-wing political party. During the election campaign there also appeared fake titles of articles, e.g., title "Jarosław Kaczyński got a gun" suggesting that the leader of the right-wing party has a pistol. In fact, the article concerned the chocolate artifact, which was a gift. A month before the election "Dziennik Gazeta Prawna" newspaper published an article about the proposal of reducing teachers' retirement age in Poland. The Ministry of Education rectified that there are no discussions carried out on this topic. During the election campaign graphics presenting fake screens on national TV channel "TVP INFO" were distributed, with manipulated headlines suggesting that one of the Members of Parliament Dominik Tarczyński from Law and Justice Party is an adversary of abortion, brothels, sex shops and pornography. The information was virally shared by Internet users. A similar example was a broadcast by another Polish TV private channel "TVN 24," which published a fake headline insinuating that Poles should not have voting rights and some decisions should be made by the European Union directly. At the same time, a fake photo with Polish president kneeing in front of the leader of the right-wing party in church was published, which was a photomontage. Generally, photomontages became fairly popular during the election campaign. Not only photos, but also election posters, were manipulated, even officially. At the press conference of Law and Justice Party, one of the opposition MP's poster was shown with changed campaign slogan.

Authors of fake news also used manipulated information concerning less important incidents. When in the countryside a one-meter-high viewpoint was built, citizens were informed about the enormous costs of construction incurred by the members of Law and Justice Party, what was manipulated news.

All evaluated fake news proved to be harmful and could have an impact on election results. Citizens' misinformation was especially dangerous for unaware voters and could despite for their decisions supported by dishonest information or manipulated and propaganda contents. Unflattering way of presenting the head of state may also be discussed as harmful effect of fake news.

Fake news published in digital environment during the campaign caused many reactions like a large number of posts on social media, negative comments and hatred related to political parties, reactions consisting of various comments, sharing posts and extending the range of fake news. It also activated discussion which has grown into hatred. In general, it has contributed to criticism, disinformation and created unnecessary confusion.

4 Conclusion

Our findings indicate that the number of fake news found on social media concerning the Polish election campaign is not high (11) and the observed mechanisms are typical for this type of news. We may list fake news with manipulated, fabricated, imposter content, as well as news with false context. It is worth saying that other media such as press and especially public television managed by the governing party have a great influence on political awareness and electoral decisions. These also have a large impact on manipulating information. Generally, manipulating the news content constitutes a threat for democracy and should be a subject of people's vigilance and also an object of interest for the media.

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University Students' Awareness of Fake News on the Web: The Role of Detection Plugins

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Abstract. Misinformation has become common in the online world, where anyone can create and quickly disseminate news to the public around the globe using social media. Young people are particularly drawn towards social media, which makes this population vulnerable to fake news and misinformation. According to the European Union, misinformation is false information created to confuse people and hide the truth. Being able to detect fake news is difficult given the plethora of information available online. To mitigate this problem, a number of plugin extensions exist to warn users of unreliable and unverified content and help them detect fake news. Considering the recent media attention, a number of studies have been conducted in this area. However, this is the first research on this topic in Croatia. The purpose of this paper was to better understand 1) what fake news detection plugins are currently available in Croatia, 2) students' attitudes and experiences with fake news and plugin detectors, and 3) how Croatian students evaluate news and what detection strategies they use. In person testing was conducted with ten Croatian university students, during which they were presented with fake and truthful online news on the same topic, to understand if and how they differentiate between the two. In a follow up interview their testing experience as well as their overall experience with fake news and detection plugins was discussed. The results showed that detection plugins do not work for news in Croatian language. When presented with fake news with active detection plugins, students did not notice them on the screen. Also, students were not familiar with plugins and how they work and said they normally evaluate the veracity of the information based on the name of the site, author, objectivity, and writing style.

***Keywords*:** fake news, plugins, Croatian university students, media literacy

1 Background

With the advancement and easier access to technology, an increasing number of people have access to the Internet where fake news can easily be created and spread by anyone. As a result, the amount of false news is growing. According to the European Union (2019), the term misinformation refers to false information created to confuse people and hide the truth (European Union, 2019). Hiding and distorting the truth leads to the notion of fake news. According to Collins dictionary, the term *fake news* is defined as false, often sensational, information disseminated under the guise of news reporting (Collins Dictionary, 2019). Since news are easily spread, the problem starts when fake news is mixed with the truth. That often leads to confusion of the masses and can affect their judgment whether or not the information is true. According to Fletcher (2019) news are mixed from various sources that are shared on social networks, leading to a more difficult assessment of veracity (as cited in Nygreni & Guath, 2019).

Evaluating news has become increasingly challenging, so the role of fake news detection plugins is crucial when people are skeptical about the veracity of information or news they read online. According to Technopedia, the term *plugin* is defined as an extension that is added to the browser which can make research easier for people in the online world full of various

information (Technopedia, 2019). One of the roles of plugins is to evaluate the veracity of the source and the news itself.

Most young people live on the Internet which provides a platform for their education, work, communication and entertainment. In that context, the Internet, especially social media, becomes the main link between their private, social and business life. According to Musgrove and colleagues, it is important to educate young people throughout their education about fake news, their availability and dissemination, as well as ways to identify fake news. Specifically, they should be thought critical and analytical thinking, a need to evaluate every information and at the same time develop their information literacy (Musgrove et al., 2018).

Given the prevalence of fake news and the effect they can have on forming opinion among young, and old population, this study was designed to identify what plugins available in Croatia, and better understand how Croatian university students use plugins and in general evaluate the veracity of news they find online.

2 Methodology

The purpose of this paper was to better understand how students in Croatia evaluate news online and the role fake news detection plugins play in that process. Specifically, the following three research questions led this study:

1 What fake news detection plugins are currently available in Croatia?
2 What are students' attitudes and experiences with fake news and plugin detectors?
3 How Croatian students evaluate news and what detection strategies they use?

The study was conducted with students at the University of Zadar. Ten university students enrolled in undergraduate (N=4) and graduate (N=6) programs were recruited for the study. They were between 21 and 26 years old. Although only students from the University of Zadar were recruited, this is not expected to have an impact on the results since students from all over the country attend various study programs (humanistics, technical, specialised programs) offered by the University, which gives a good variety of respondents that represent Croatian students in general.

To answer the first research questions, authors looked for fake news detection plugins currently available in Croatia. Those plugins that had the best "rating" by the Internet users were taken and tested on various serious and satirical portals in order to evaluate their functionality and effectiveness. Second and third research questions were answered using the data collected in ten in-person interviews. Interviews were between thirty minutes and one hour long and were divided into two parts. During the first part of the interview, participants were presented with five articles on the same topic, one truthful and four articles containing fake news. The first two articles (one fake and one truthful) were shown without a plugin, and the remaining three articles were shown using plugins in different orders and combinations (see Table 1). Three plugins that worked on both serious portals and satirical sites were selected, including *Fake news checker* (plugin 1), *ZenMate SafeSearch* & *Fake News Detector* (plugin 2), and *NewsCracker* (plugin 3*)*. The participants were asked what they think about the articles they read without any mention of fake news. The purpose was two-fold; to determine if they can tell the difference between fake and truthful news and whether they have noticed the detection plugins on their own.

Table 1. Order of articles as shown to the participants

Participant 1	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article B + plugin 1	Fake article C + plugin 2	Fake article D + plugin 3
Participant 2	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article C + plugin 1	Fake article D + plugin 2	Fake article B + plugin 3
Participant 3	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article D + plugin 1	Fake article B + plugin 2	Fake article C + plugin 3
Participant 4	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article B + plugin 1	Fake article C + plugin 2	Fake article D + plugin 3
Participant 5	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article C + plugin 1	Fake article B + plugin 2	Fake article D + plugin 3
Participant 6	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article D + plugin 1	Fake article B + plugin 2	Fake article C + plugin 3
Participant 7	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article B + plugin 1	Fake article C + plugin 2	Fake article D + plugin 3
Participant 8	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article C + plugin 1	Fake article D + plugin 2	Fake article B + plugin 3
Participant 9	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article D + plugin 1	Fake article B + plugin 2	Fake article C + plugin 3
Participant 10	Article 1 (truthfull) without plugin	Fake article A without plugin	Fake article B + plugin 1	Fake article C + plugin 2	Fake article D + plugin 3

A follow up discussion was done in the second part of the interview to better understand participants' perception of design for each detection plugin in scope, as well as their prior experience with fake news and detection plugins.

3 Findings

3.1 Respondent's Background: Demographics, Devices Used and Portals

When asked about their online news reading habits, seven participants said they read news on their mobile device, and the remaining three used both mobile phone and laptop. Participants had interest in various topics but the most frequently have mentioned portals with entertainment content and daily news (N=10), including Index.hr, 24 Hours, Zadovoljna.hr, Antena Zadar, eZadar, Dnevnik.hr, Jutarnji and Večernji list, news about movies and fashion (N=5), science (N=3), sports news (N=2), and politics (N=2). Three participants mentioned that they visit Reddit on a daily basis, which directs them to other portals. Half of the participants access portals exclusively through Facebook.

3.2 Research Question 1: Plugins Available in Croatia

To answer the first research question, authors looked for plugins currently available to Internet users in Croatia. A list of top-rated plugins was found through Google, including B.S Detector, Escape your bubble, Fake News Detector with Pinocchio Alerts, NewsCracker, ZenMate SafeSearch and Fake News Detector and FakeNews Checker. Authors applied those plugins to

several international (in English language) and national portals (in Croatia language) commonly used by young Croatians, including both credible (Jutarnji list, Index.hr, HuffPost), and satirical portals (Onion, Clickhole, Sprdex, 9Gag, Daily news), as well as social networks (Facebook, Instagram and Twitter). All tested plugins have been found to work well for portals in English language but have provided no evaluation for content in Croatian language. Also, none of the evaluated plugins worked on social networks and Youtube video, regardless of the language. Since none of the available plugins supported Croatian language, authors decided to conduct the research using articles in English.

3.3 Research Question 2: Students Attitudes and Previous Experiences With Fake News and Plugin Detectors

The aim of the second research question was to understand students' overall attitudes and previous experience with fake news and detection plugins. Only one out of ten respondents used the term *fake news* in the context of Trump news but the rest of the respondents did not use that term, but were aware that everything they read was not true and could not be trusted completely. When asked how they evaluate veracity of the news online participants said that they 1) examine the entire article and the portal where it was published (N=3), 2) look at the writing style of the article and presence of grammatical errors in the text indicates it was not written by a professional (N=2), 3) judged the veracity of the article by the writing style and objectivity of the journalist (N=2), 4) they are more likely to trust an article if it was written by an expert (N=2), 5) title, picture and the name of the webpage or portal (N=1) and 6) look for more articles on the same topic in order to evaluate the truthfulness (N=1). Participants found it difficult to estimate the veracity and believed the person would have to have a formed opinion about a certain topic or enough knowledge based on which they can evaluate that newly found article (N=2). In general, the majority of participants (N=5) stated they do not believe all the information found on the Internet.

Only half of the participants felt they are able to successfully identify whether the news was fake or truthful. Three out of ten participants stated that their judgment depends on the type of news, and the remaining three participants stated that they are not able to properly evaluate news by themselves. None of the participants was familiar with the notion of plugins in the context of fake news and some mentioned plugins used in games or to block advertisements as they only plugins they know (N=2). Three out of ten participants stated that they were under the impression there was no program that could verify all the information in a reliable way, but suggested that it might be useful. Remaining three participants stated that they are not completely sure about positive contribution of plugins. Additionally, the majority of participants (N=7) thought there was a connection between fake news and propaganda when it comes to influential people that are in the public eye a daily basis, who can use propaganda for their agenda.

When asked about the fake news awareness on the Internet among the student population at the University of Zadar, participants had differing opinions. Less than half of the participants (N=3) believed students are aware of the fake news. Three out of ten participants believed students were not sufficiently aware and that it is difficult to identify fake news except for those on satirical portals. Another three participants were not entirely sure about the level of students' awareness. Although one participant stated that students could recognize fake news, they added that it was difficult to find a middle ground on most portals and news. Finally, one participant thought that students enrolled in information and communication science programs should be able to identify fake news, while other students can recognize the basic difference. The majority of respondents (N=7) thought Croatian students were in general not familiar with the term plugin in any context and, while the remaining three believed students are familiar

with the plugins. One pointed out that only students enrolled in computer science or journalism programs would be aware of fake news detection plugins.

Finally, some students thought fake news can be entertaining for people but that serious portal should not disseminate that kind of content. One participant thought that fake news will remain popular and that portals will do their best to get as many views as possible; therefore, there is need to talk more about fake news and educate people on various media literacy topics (N=1).

3.4 Research Question 3: Croatian Students' News Evaluation and Fake News Detection Strategies

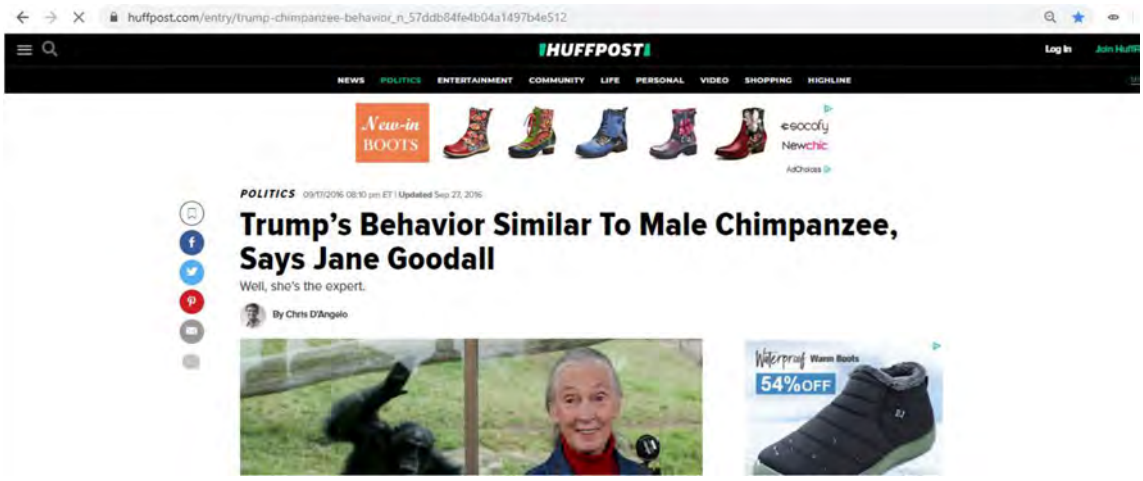
The third research question aimed to better understand how students evaluate online news and what detection strategies they use. To answer this question, participants were presented with truthful and four articles with fake news, three out of which had a plugin detector activated. Four out of ten respondents thought the first article was not true because of the comparison made by the anthropologist. They perceived the article to be more humorous than objective and serious. Those respondents (N=4) who falsely assumed the second article was credible did so because of their previous familiarity with the topic; the individual featured in the article is known to make a surprising statement which made the respondents believe in this fake news too, although the text made no sense at all to them.

Table 2. Students perception of the veracity of the articles

	Trump's behavior similar to the male chimpanzee says Jane Goodall (truthfull news)	Trump mocks Trudeau for celebrating Thanksgiving '6 weeks early' (fake news)	Trump plans to force Taliban to negotiating table by January 2025 (fake news)	The seven things Trump knows about British politics (fake news)	U.S. Democrats to begin impeaching Trump and losing 2020 election (fake news)
Participant 1	Truthfull	Truthfull	Truthfull	Truthfull	Truthfull
Participant 2	Truthfull	Fake	Truthfull	Not sure	Truthfull
Participant 3	Truthfull	Truthfull	Truthfull	Truthfull	Not sure
Participant 4	Truthfull	Truthfull	Not sure	Fake	Fake
Participant 5	Truthfull	Truthfull	Not sure	Fake	Fake
Participant 6	Fake	Fake	Not sure	Fake	Fake
Participant 7	Truthfull	Fake	Fake	Fake	Truthfull
Participant 8	Fake	Fake	Fake	Fake	Not sure
Participant 9	Fake	Fake	Truthfull	Fake	Truthfull
Participant 10	Fake	Fake	Fake	Fake	Fake

Another reason for not recognizing whether the articles are true or not included participants not having sufficient knowledge about politics. One respondent pointed out that most articles were exaggerated and the headlines had nothing to do with the content.

When presented with three fake news articles with installed fake news detector plugin, none of the participants noticed the plugin icon (see visual 1, 2 and 3) on their own for any of the three plugins as they were focused on reading the articles.



Visual 1. Fake News Checker plugin icon

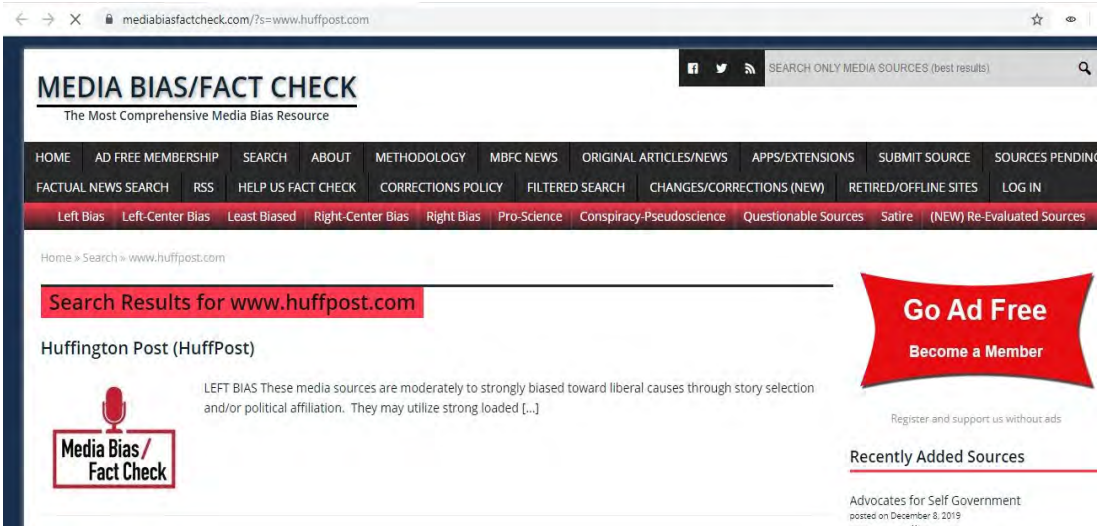
Visual 2. ZenMate SafeSearch & Fake News Detector plugin icon

Visual 3: NewsCracker Plugin Icon

After the participants were presented with the articles again and asked if there is something on the screen that tells them about the veracity of the article, they did not notice anything. Their focus was on the content, pictures, objectivity of the article, citations and writing style, and not on the interface. Therefore, they did not notice the plugin icons on the interface (see visuals 1, 2, and 3). Only one out of ten participants noticed the icon, but did not realize it was a plugin.

Next, participants were made aware of the plugins and asked about the reason they did not notice them and recognize their purpose. First plugin, *Fake News Checker* was not visible

because the icon was small and confusing and the warning was not listed on the first page. Participants had to click on the icon to open the results of evaluation in a separate tab, which was perceived to be complicated and time consuming by some participants.



Visual 4: Screenshot of evaluation results from *Fake News Checker* (after your click on the icon)

The second plugin, *Zenmate Safesearch & Fake News Detector*, was not noticed right away because the icon was too small. Once participants got familiar with this plugin they liked it more than the other two due to the color (orange and green) and visual cues (triangle and exclamation point) that gave them a clear warning. They thought this plugin is simple and efficient because the plugin automatically gives them a warning without having to click on anything. Three out of ten participants stated that they would prefer to see red color instead of orange since red color is more visible and signals that something is wrong.

Participants thought the icon of *NewsCracker* was very confusing because there is a plugin logo, but no evaluation results or warning about the veracity of the article was shown right away. However, they thought *NewsCracker* plugin shows them more credible evaluation of the articles compared to the other two plugins as it offers the most detailed evaluation results for the source where articles were found as well as the level of veracity of the article.

Visual 5: Screenshot of evaluation results from *NewsCracker* (after you click on the icon)

After they got familiar with plugins and how they work, participants were asked to what extent they trust plugins. Half of the participants (N=5) said they trust plugins to accurately flag the content that is potentially not truthful. Some participants (N=4) felt that the plugins could not

completely accurately assess the veracity, but could be useful. One respondent said that this plugin is not trustworthy as it is not clear which parameters it uses to make the evaluation.

4 Discussion and Conclusion

The number of news available online is increasing every day, especially in social media, among which there is a significant amount of information with questionable veracity. With technology continuously evolving, there are a number of software solutions that can help users detect fake news that they cannot recognize on their own. As much as technology makes it easier for users to evaluate information, it can make people think less critically, as confirmed by Kizgin et al. (2018) who points out that the media has a direct impact on society and shape the views of individuals (as cited in Jameel et al., 2019). According to Pennycook and Rand, people fall for fake news because they fail to think (p. 10). Their research shows that individuals who are more willing to think critically when presented with a set of reasoning problems are less likely to think fake news is accurate and those who are more analytical are more likely to think legitimate news is accurate (Pennycook & Rand, 2019).

This research showed that plugins in scope do not work for articles published in Croatian portals, most likely due to the language. Also, the tested plugins did not work on social networks and Youtube video, regardless of the language. The research community has started looking for a solution to identifying fake news online. Wang and the team proposed a framework that can be used to detect whether the images and text on Twitter were true (Wang et al., 2018). Researchers from MIT's Computer Science and Artificial Intelligence Lab (CSAIL) and the Qatar Computing Research Institute (QCRI) believe that the best approach is to focus on the news sources themselves and not only on individual claims, and have developed a system that uses machine learning to determine if a source is accurate or politically biased (Baly et. al., 2018). Castelo et. al (2019) proposed a topic-agnostic (TAG) classification strategy that uses linguistic and web markup features to identify fake news pages.

Generally, students in Croatia are familiar with fake news but none of the participants in this study used a fake news detection plugin before to help them identify articles with questionable veracity. Instead, they tend to evaluate veracity of the news by using several strategies: examining the article and the portal where they found the article, writing style of article and grammar, author, title, photos, name of the portal/page, and comparing what they read to other articles on that topic. Mantzarlis and Zimdars suggest checking for fake news by first paying attention to the link domain (i.e., domain .com.co) and citations (Mantzarlis and Zimdars, 2016) Next, they recommend checking *About Us* section, quotes in the text, and comments below the article and pictures. If the statement that is being quoted is true, it is likely that other portals will publish the same quote, so this is another way of verifying the truth (as cited in Wynee, 2016).

Students found it difficult to do the evaluation without knowing much about the topic or previously formed opinion. Those who expressed interest in politics recognized fake news more accurately. Those respondents who did not have any interest in the topic of the articles found it difficult to evaluate and comment on the articles. Half of the participants said they did not believe everything they read online and were confident they could successfully identify whether news was fake or truthful. In general, Croatian students believed there was a connection between fake news and propaganda and that prominent people can use fake news for their own benefit, and therefore it would be critical to make the student population more aware of the risk fake news pose and teach them how to evaluate the veracity and what detection plugins they can rely on.

O'Donnell's (2015) described propaganda as systematic attempt to censor the true news and shape content to change the mindset of the masses (as cited in Jones, 2019).

The results show that students could not differentiate between fake and truthful news on the same topic. Wineburg's study from 2016 yield similar finding about students not being able to successfully recognized whether or not articles were fake news (as cited in Leeder, 2019). Additionally, none of the participants in this study noticed plugins on their own while reading articles. Even when prompted to see if anything on the screen indicates whether or not articles were fake, participants still did not notice the plugin icon. The reason for overlooking the icons was size and color of the icon and reader's focus being on the content, pictures, objectivity of the article, citations and writing style, and not on the interface. They found visual cues used to signal warning (e.g., triangle and exclamation point) helpful once they noticed them. Furthermore, having to click on the icon in order to see the evaluation results in a new tab was perceived as both time and effort consuming.

Although half of participants said they would trust plugins to correctly detect if something was potentially fake news, not communicating clearly what parameters are used by a plugin to evaluate the news made some participants not trust plugins. Interestingly, those who did not fully believe plugins still found them useful to signal that the content should be consumed with caution. As for the plugin and fake news articles go, only the plugin-related articles were found to be applicable on social networks such as Twitter and Facebook but not on web portals and pages. Given the large presence of fake news, more research should be conducted of the usage of fake news detector plugins on the Internet in general.

Students believed that the majority of students in Croatia would not be familiar with fake news detection plugins and would not be able to successfully evaluate the veracity of news on their own. Furthermore, only those students enrolled in programs like LIS or journalism were thought to potentially be successful in detecting fake news.

In conclusion, the threat of fake news can be addressed by providing education on the topic and further development of technology to help recognize fake news regardless of the language. It is important to design media literacy programs aimed at increasing fake news awareness among the students in Croatia and educate about the use of plugin detectors as well as other evaluation strategies they can employ to recognize fake news. Also, technology designers should design more intuitive and user-friendly fake news detection plugins that users can quickly notice, understand their purpose and help shape their perception of the article. The results of the evaluation (i.e., warning) should be displayed on the same page and not be listed in a separate tab after users click on the icon, as this takes time and effort and disrupts users primary activity.

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Who Knows What Fake News Look Like?

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Abstract. There are numerous news outlets and news portals as well as countless information sources in the online environment today. In that kind of environment, it is hard to detect disinformation and misinformation. There are numerous programs and systems available today that can automatically detect fake news (e.g., Snopes, Hoaxy, Politifact, etc.), but the most important part of detecting fake news is information and media literacy of the audience that enables them to evaluate presented information and recognize false news. The aim of this research is to examine the way students of information sciences evaluate news and information conveyed through news articles. The main purpose is to determine their level of understanding of fake news and to assess their ability to identify them. The paper answers the following research questions: are students familiar with the term 'fake news'; what is the student's perception of their ability of recognition of fake news?; to what extent are they actually able to recognize fake news and how do they evaluate news? This research was conducted on the sample of 38 students of information sciences. Research has shown that students use different ways to evaluate daily news articles and are mostly successful in recognizing fake news.

***Keywords*:** fake news; news evaluation; student's perception; university students

1 Introduction

In today's society, the Internet has become the main mass communication tool and the leading media for information retrieval. Due to the technological advancements, news is massively spreading through online platforms and social media, since it is faster and cheaper and has more reach. Although journalism adapted to the new environment, the same moral and professional principles that the journalists honored in the traditional environment had to apply to online news as well. According to Kovach and Rosenstiel (2007), the journalistic responsibility is to transfer reliable information gathered with the professional discipline of assembling and verifying facts. Their approach to work must be objective and unbiased and should represent diverse viewpoints and interests and place them in context. Journalists should refrain themselves from sensationalizing. Their work must be transparent and in the service of the public interest. Nowadays, it is often hard to recognize the original source of information, i.e., news. Therefore, one can always be suspicious whether the news is true or fake. The online news portals serve as an intermediary, serving both the interest of information seeking citizens and their own interests in the process of making the news online (Peterson & Domingo, 2008). Since news portals often serve only as a place where news is collected and gathered from different sources, it is important to access all news with the critical view.

2 Fake News: Definition and Typology

The concept of fake news is not a new concept, but has existed since the invention of printed media. Interest and the body of literature with the topic of fake news is rapidly growing. In modern times, due to technological advances, news is massively spreading through online platforms and social media, since it is faster, cheaper and has more reach, making it easier than ever to spread disinformation and misinformation. Fake news is defined as "news articles that

are intentionally and verifiable false and could mislead readers" (Shu, K., Slivaz, A., Wangy, S., Tang, J., & Liuy, H., 2017, p. 23). They include "false information that can be verified as such and are created with dishonest intention to mislead consumers" (Shu, K. et al., 2017, p. 23).

2.1 A Typology of Fake News

Tandoc Jr., Lim and Ling (2018) identified six types of fake news: satire, parody, fabrication, manipulation, propaganda and advertising, which makes recognizing fake news that much more complicated. Tandoc Jr. et al. (2018) define satire as the most common operationalization of fake news, referring to mock news outlets. Satire typically uses humor or exaggeration to present audiences with news updates. The use of humor is not superficial, and humor is often used to provide critiques of political, economic or social affairs. Satire news is both informing and entertaining. Satirical programs are also acknowledged to have significantly shaped public discourse, opinions, and political (Kohut, Morin, and Keeter, as cited in Tandoc Jr. et al., 2018 p. 141). Tandoc Jr. et al. (2018) also mention news parody and news fabrication. News parody uses a presentation format which mimics mainstream news media. It uses non-factual information to inject humor. It doesn't provide direct commentary on current affairs through humor, but plays on the ludicrousness of issues and highlights them by making up entirely fictitious news stories. News fabrication refers to articles which have no factual basis but are published in the style of news articles to create legitimacy and has the intention of misinforming. Fabricated news is difficult to distinguish because they provide some semblance of objectivity and balanced reporting.

While the previous categories referred to text-based content, it is also possible to use visual content to create fake news. Images manipulation can also be used to create false narrative. It has become an increasingly common occurrence with altering digital photos using image manipulation software (Tandoc Jr. et al., 2018). Describing advertising materials in the guise of genuine news is also a form of fake news.

According to Farsetta and Price advertising becomes fake news "when public relations practitioners adopt the practices and/or appearance of journalists in order to insert marketing or other persuasive messages into news media" (as cited in Tandoc Jr. et al., 2018, p. 145). And lastly, the sixth type of fake news is propaganda. Tandoc et al. (2018) argue that propaganda refers to news stories which are created by a political entity to influence public perceptions. The overt purpose is to benefit a public figure, organization or government. Previous research showed that propaganda can be used as "a tool for political actors to articulate a position on a specific issue and to shape perceptions and actions of domestic and international audiences" (Khaldarova and Pantti 2016, p. 893).

It is evident that satire and news parody don't have the same intention as other types of fake news. Satire and news parody are intentionally sarcastic and are intended to entertain. There is an assumption that the consumer is familiar with the intention of such articles. Unlike satire and news parody, the other types of fake news purposely misinform the consumers with the intention to influence their understanding of news and their opinions. There are numerous programs and systems available today that can automatically detect fake news (e.g., Snopes, Hoaxy, Politifact, etc.), but the most important part of detecting fake news is information and media literacy of the audience that enables them to evaluate presented information and recognize false news. As UNESCO (2011, p. 16) states, "The competencies acquired through media and information literacy can equip citizens with critical thinking skills enabling them to demand high-quality services from media and other information providers". These competencies help with immunizing the audience against persuasion and false information. Besides being information and media literate, a study conducted by researchers at Yale University, Pennycook, Cannon and Rand (2018) shows that repetition increases perceived

accuracy of fake news headlines and that a single prior exposure to them was sufficient to increase subsequent perceptions of their accuracy.

2.2 Recognizing Fake News

Unlike the traditional media, websites operate without much oversight or editorial review. Information posted on the Web may not be subject to filtering through professional gatekeepers, and it often lacks traditional authority indicators such as author identity or established reputation. There are no universal standards for posting information online, and digital information may be easily altered, plagiarized, misrepresented, or created anonymously under false pretenses (Metzger, M. J., 2007). Walthen and Burkell (2002) proposed an iterative model for how users judge the credibility of online information. They claim that credibility assessment takes place in three stages. First, users form an impression of the overall site credibility by examining its surface characteristics (e.g., appearance and presentation, usability and interface design, organization of information). After that, the information is evaluated for its credibility by looking at the characteristics of the source (e.g., expertise, trustworthiness, credentials) and message (e.g., currency, accuracy, relevance to the user). The third stage involves factoring in the user's cognitive state at the time of evaluation. That means that credibility assessment is going to differ from person to person. According to Shah, Ravana, Hamid and Ismail (2015) credibility can also be determined by eight factors: accuracy, authority, aesthetics, professionalism, popularity, currency, impartiality, and quality, as shown in Table 1.

Table 1. Eight factors of credibility (Shah et al. 2015)

Category	Explanation
Accuracy	Correctness of the information provided by the author.
Authority	Experience and popularity of the author. This includes authors' qualifications and credentials in the Web community.
Aesthetics	Aesthetics Combination of colors, layout, images, videos, fonts, use of bulleted lists, or presentation of tabular data used on the webpage.
Professionalism	Policies and features available on the website.
Popularity	Website's reputation among Web users and reviewers.
Currency	Frequency of updates applied to the content Impartiality Lack of bias in the content.
Quality	Whether the article has been peer-reviewed or not and other factors contributing towards the quality of the content.

Leading international library organization IFLA (International Federation of Library Associations and Institutions) released a statement (IFLA, 2018) on fake news in which they listed eight simple steps to verify credibility of news sources:

- consider the source: it is necessary to investigate the site, its mission and contact info;
- read beyond: it is necessary to read the whole story not just headlines;
- check the author: the most important thing is the credibility of the author;
- supporting sources: it is advisable to check the story further;
- check the date: a story must be current and relevant;
- is it a joke?: it is possible for the story to be satire or news parody;
- check your biases: it is important to be aware of own beliefs and not let them affect the perception of news;
- ask the experts: it is advisable to consult an expert or fact-checking site.

3 Research

This research focuses on students of the Department of Information Sciences at the University of Zadar. The aim of this research is to examine the way students of information sciences evaluate news and information conveyed through news articles. The main purpose is to determine their level of understanding of fake news and to assess their ability to identify them. Research questions in this research are:

1 are students familiar with the term 'fake news'?
2 what is student's perception of their ability of recognition of fake news?
3 to what extent are students actually able to recognize fake news?
4 how do students evaluate news?

4 Sample and Methodology

The study was conducted on a sample of 38 out of 96 students (40%) currently enrolled at the program. From the undergraduate level, 17 out of 63 students (27%) responded and from the graduate level 21 out of 33 students (64%). The response rate was underwhelming, particularly from the undergraduates, especially first and second year.

Students were tested using a two-part survey questionnaire created using Google Forms that was disseminated through the department's e-courses hosted on the official e-learning platform "Merlin". First part of the survey consisted of open and closed questions that researched their self-assessment/perception of their own ability to recognize and define fake news, and to determine if there is a prior knowledge and education on the topic of fake news. The second part consisted of an assessment task containing four daily newspaper articles of questionable content for participants to evaluate. By combining above-mentioned factors and steps a list of elements for determining the level of article accuracy and/or authenticity was created: authority, source, title, content, additional content, vocabulary, aesthetics, relevancy (date), URL address, advertisements, supporting sources. Two Croatian and two foreign (U.S.) articles were selected. Out of four selected articles one was accurate and/or authentic, and another three were different examples of fake news. The instrument was pre-tested by eight students who filled out the questionnaire to check for any question or wording issues. No changes were made, so their answers were included in the final results. All the qualitative data were processed using a text coding method to facilitate data analysis. While coding, additional elements were identified: context, intent, sentiment, political bias, topics (familiarity), writing style and not defined.

5 Analysis and Discussion

RQ1. Are students familiar with the term 'fake news'?

All of the students indicated that they know how to recognize fake news. The majority of students offered a simple explanation of the term, mostly that it is a lie or disinformation, but some of the students offered broader explanations such as "unverified information" or "unverified source", "inaccurate information", "made up information", "clickbait", "political bias", "satire", "parody", "sensationalism", "propaganda" or irrelevant content made with the purpose of intentional or accidental spreading of misinformation or disinformation. It is evident that most of the participants really are familiar with the concept of fake news and can more or less define it. Only one participant did not define fake news in the same context as others, but offered a definition in the context of scientific literature. Participant defined fake news as "inaccurate, unverified information that we may encounter while searching literature or online sources for the purpose of producing any professional or scientific work. They are composed of,

or are not aware of, inaccurate and/or unverified data, claims or theories that are not based on probable sources and literature".[1]

RQ2. What is student's perception of their ability of recognition of fake news?

The survey examined students' self-assessment of ability to identify fake news. Participants were offered the five-point scale for them to evaluate their own ability and level of recognition of fake news.

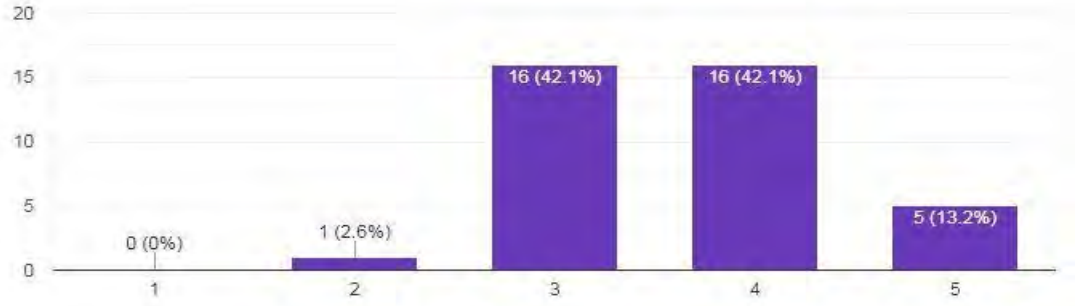

Fig. 14. Participants' self-assessment of recognizing fake news (1 – incapable to recognize; 5 – quite capable to recognize)

Out of the 38 participants, five of them claimed that they are quite capable to recognize fake news, as shown in Figure 1. Equal number of participants marked the fourth and third level of the scale, indicating that they are able to recognize fake news to some extent, fourth level being slightly more capable. Only one participant deemed themselves to be mostly incapable to recognize fake news, while no participant thought themselves incapable to recognize fake news.
RQ3. To what extent are students actually able to recognize fake news?
Participants were offered the five-point scale to evaluate each of the four articles. They were required to mark level 1 if the news was false and level 5 if true. The first assignment task (A1) represents a satire. The majority of the students (73.7%) recognized this article as a satire (they marked levels 1 and 2). Almost a quarter of the participants (21.1%) marked level 3, which means that they consider the article to have both true and false elements. It is true that satire has elements of truth, but it is a type of fake news. Three of the participants (5.2%) considered this article to be true (marked level 4 and level 5). The second assignment task (A2) was the example of authentic/accurate news article. The vast majority of the participants (81.5%) recognized this article as truthful (levels 4 and 5). Some of the participants (15.8%) were unsure and considered this article to have both true and false elements (level 3). Two participants (2.6%) marked this article as mostly false, but not one participant considered it completely false. The third (A3) and fourth article (A 4) offered are both examples of fake news. The first level is marked by 34.2%, the second 23.7% and the third by 28.9% of the participants. None of the participants marked the fourth level and 13.2% of the participants marked level 5, considering this article to be true. Regarding fourth assignment task, 44.7% of the participants marked level 1, 18.4% marked level 2, 21.1% marked level 3, 10.5% marked level 3 and 5.3% marked level 5. These examples show a variety of answers and are not as clear to interpret as the first two examples.

This analysis of accuracy of identifying fake news was put into correlation with the year of study and self-efficacy, as shown in Table 2.

[1] All the examples given are translated from Croatian.

Table 2. *Correlations between the year of study, self-efficacy and accuracy in recognizing the truthfulness of news*[2]

N=38	Year	Self-efficacy	A1	A2	A3	A4	Overall accuracy
Year		,41	,17	-,08	,25	,29	,32
Self-efficacy	**,35**		**,37**	-,25	,34	**,44**	**,47**
A1	,12	**,35**		-,02	,11	**,35**	**,65**
A2	-,03	-,23	,06		-,17	-,24	,12
A3	,22	**,36**	,14	-,11		,25	**,64**
A4	,17	**,46**	**,36**	-,17	,28		**,70**
Overall accuracy	,17	**,49**	**,63**	,16	**,65**	**,70**	

Self-assessment of their own ability to recognize fake news is positively correlated with the year of study, which means that students at higher years of study have higher self-confidence in their own ability (self-efficacy) to recognize fake news. According to Ormond, Warkentin, Johnston and Thompson (2016, p. 201) deception detection self-efficacy is an "Internet user's perception of her or his own ability to identify a source or message as misleading". Self-efficacy in identifying fake news in this case is related to the accuracy of identifying the first, third, and fourth news that were false, while the correlation with the accuracy of recognizing the truth of the second true news is not statistically significant. Based on this, it can be assumed that in this research, recognizing the truth and recognizing false news required a different set of skills or evaluation criteria (context). Due to the specific content in A2, respondents used specific evaluation criteria. Indications that respondents evaluate the truth of A2 in a specific way are also evident from the tendency towards a negative direction of correlations with A2, although these correlations are not statistically significant. The sample size is not large enough, so additional research is needed to verify the relationships between the variables.

RQ4. How do students evaluate news?

Participants used a variety of elements to recognize whether the news was fake or not. Some of their answers were consistent with a list of elements created by the researchers for determining the level of article accuracy and/or authenticity, such as authority, soured, title, content, additional content, vocabulary, aesthetics, relevancy (date), URL address, advertisement and supporting sources. Several other elements were identified by which the participants recognized fake news: context, intent, sentiment, political bias, topic (familiarity), writing style and not defined. 'Not-defined' category was used in cases where the elements weren't defined or the answers were unclear. Also, it was used if the participants offered their strong personal opinions about the subject of the article, as the only criteria. 'Context' was used when participants pointed out situational context as a mean to determine accuracy and/or authenticity.

'Context' was heavily implied in a truthful Croatian article (A2), where participants made a decision based on their experience. For example: "Probably true. Such things happen in our surroundings."; "A realistic situation that happens every day in our country."; "Because people are poor. I know I'm from Slavonia."; etc. Category 'Intent' was used when participants pointed out an intent to influence the opinion, for example "…false information that seeks to impose an opinion on others." 'Sentiment' was used when participants mentioned a tone of the article, for example "Malicious, serves to undermine."

Some of the elements turned out to be statistically significant for determining fake news, for example 'source' in A1 and 'title' in A3, as shown in Table 3. and Table 4.

[2] Note: above the diagonal is Pearson's (R) and below the diagonal are Spearman's correlations (R); Year - year of study; Self-efficacy - self-assessment of the ability to identify fake news; A1, A2, A3 and A4 - the accuracy of identifying fake and one truthful news story; Overall accuracy - recognizing the truthfulness of news across all 4 tasks.

Table 4. Mann-Whitney U Test; By variable A1_source Marked tests are significant at p <.05000

	U	Z	p-level
A1 Accuracy	87.50	-2.70	0.007

Table 5. Mann-Whitney U Test; By variable A3_title Marked tests are significant at p <.05000

	U	Z	p-level
A3 Accuracy	60.0	-2.1	0.03

Participants who cited the 'source' in A1 as an element of recognition were more successful in recognizing fake news. Participants are mostly familiar with the site reputation (*News Bar*) and recognized it as a satire. Participants who cited the 'title' in A3 as an element of recognition were also more successful in recognizing fake news.

The article title is clickbait and also contains inappropriate vocabulary ('Obama Just Did Unthinkable To All 26 Victims Behind Trump's Back While He's Overseas – This Is SICK').

6 Conclusion

This research has shown that students use different ways to evaluate daily news articles. Some of the elements of recognition are repeated more often, especially source, content, title and topic (familiarity). However, many students recognized specific elements, like writing style, vocabulary, aesthetics, etc. The students were mostly successful in recognition. According to these results, it can be concluded that there is a level of critical thinking among the students. However, in this case, students approached the survey with the expectation of fake news, so the question is whether this knowledge affected their level of recognition.

The importance of this research is to showcase if the students of information sciences are able to recognize fake news and evaluate information in everyday news articles. The main limitation of this study is the size of the sample. A study with a larger sample would be a good follow-up to this study. Regardless, this research may serve as a basis for deeper study as well as further research and comparison between students in other fields of study.

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Would-be teachers' digital/information literacy competencies in the world of contradictory information

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Abstract. In the course of my research my goal has generally been to assess the digital competence of prospective teachers, and establish what tools they will need in their future teaching to motivate the younger generations to read more and more. The issue of learning by reading, and then teaching based on reading and learning is gaining ground with increasing intensity in our digital world. We should also take into consideration that these activities are rapidly claiming digital space.
Taking it a little further, the goal of this paper is intended to find answers to the following questions:
What kinds of sources will would-be teachers use in education? In the case of online information, will they be able to distinguish false or unreliable information from what is true and reliable, what can be regarded "fake news" in the context of the conference theme, and in terms of my research concern?
Do they have adequate media and information literacy to inform their students about proper electronic and traditional sources, too?
What digital competencies do they have, and what are the most important qualities of a good and effective teacher in their judgment?
The present study will be devoted to these issues, with a focus on Hungarian and Carpathian-Basin teacher-training programs. As for methodology, an ongoing empirical survey will be used, based on a questionnaire which investigates how Hungarian University students relate to the above issues. This work was supported by the construction EFOP-3.6.3-VEKOP-16-2017-00002. The project was supported by the European Union, co-financed by the European Social Fund.

***Keywords*:** media literacy, digital competence, teacher training, information

1 Fake news

Nowadays the devices of the digital world have appeared in all areas of life and that affected and changed our communicational, information searching/processing, administrational and many more of our habits, all in all it weaves through our every day. Education has not been left out of this shift of paradigms. An extensive international and national professional literature tackles this phenomenon and its effects: in this study I would like to focus on a narrower aspect, on the originality and bases of information, fake news and how to avoid them – with special regards on how these appear in the education system, and do they appear at all.

We face more and more often with news which does not have any real truth in them that is what we call fake news. They contain somewhat of a created information which is consciously used to deceive. Somehow this news finds a reader and takes advantage of human naivety and gullibility. The lack of literacy can also be a factor that we believe in some information.

A lot of time opposing opinions can also cause a challenge in case of some news, because we have a different stance on the matter than the article, then we can faithfully believe that it is not true or we can list the opposing mediums as well. But these are not fake news, these are just different opinions, expressing, writing down another point of view.

It is important to refer to our own experiences rather on some news because if we are not well versed in the world of media we can run into fake news anytime. [1]

Most of our knowledge about the world is not coming from our personal experiences rather from the mass media outlets. What happens if this information is being deliberately distorted, falsified to manipulate the news consumers? How can we recognize this news of deception, what kinds of features do they have, how can we shield ourselves from these?

2 Fake new in education

2.1 Germany

There is a subject in Germany which can rarely be found in any other countries, and if so in an inadequate quality. This is the subject called media literacy, which they use quite well. Flexible, every sequence can be followed between disciplines and can be easily prepared. The “Good News Bad News Fake News” program helps the students to meet with quality journalism and the press. They get a closer look into the business world of media, its rules and laws. They teach them how to use social media properly, the danger of sharing. Also, they learn about the vloggers as well. [2]

A lot of teachers in Germany are very skeptical about the existence of digital media in the schools. In the opinion of 49% of headmasters digital media is overrated n education. Fifty percent of the teachers are against their usage. One thousand four hundred seventy-one headmasters were asked in 2018, who found the attitude of the students a problem and did not realize the development and advancement of technology. Peter Meidinger thinks that schools cannot adjust to digitalization, they are skeptical about how this affects the students, they can really learn and develop digitalized. It is very important that this also depends on the personality of the teacher. [3]

The Cultural Minister of Niedersachsen made new teaching aids and curriculum for fake news. He thinks that the best method for manipulation experiments is strengthening media competency. The curriculum has a great structure, starts with the recognition of fake news, manipulation situations mixed with experiments. All in all, it contains 3 new educational segments, which was made by the Dutch Ministry of Culture so that is available for every institution in Lower Saxony.

The educational units “Fake News and Social Bots in the digital world” were developed by many institutions for High Schools. The goal was to drive students to have a critical thinking with the help of practical and real examples, to introduce source criticism, and to prepare the evaluation of studies, texts, pictures and videos on the Internet. The program especially put a big emphasis on social media. The curriculum has different tests, examples, texts and links which help teachers work and preparation. If someone would like to test themselves, you can do it with the “Fake News Check” application, which is some sort of a “Fake News-warning light” and can be downloaded on your phone for free. We get 19 questions and have to decide if the news if true or false. The app can be used in education as well. For this series of questions, the Stop Fake News Portal made teaching aids and tasks.

The portal takes on a big role in the aspiration of the government. Its main goal is to strengthen media competency in the schools. The government created a concept in 2016, which marked out goals for training in media competency and the digital world until 2020. For every field of training, they formulated different steps which need to be executed. One of the main goals is the introduction of media competency in each and every curriculum of a subject, for which the schools have a whole network of media education available. [4]

2.2 Brussels

In Brussels in the consequence of a previous survey, the Lie Detector program was made. During the survey students were asked that where they know certain information what their main source is. Their answers were not astonishing, they listed the most common social media platforms; Instagram – a photo-sharing application, not a valid source, Facebook, Twitter, also functions the same way. Messenger, WhatsApp – maybe we can find some truthful information within some conversations, but we can never be careful enough. Many times, we ask the question that why even journalism is important if people cannot make the difference between journalism and total fiction. [5]

That is what motivated Reppert-Bismarck journalist to quit his job and create the Lie Detector program. Its task is to train journalists to teach the students (above 10), to where and how they should obtain information which is certain, what kind of source they should work with, and how to identify false information. The program is supported by the American charity service, the Wyss Foundation. The courses were started in Brussels. One teacher who attended this program states that she read everything twice and now keeps a special attention to her students. She thinks you can never know what is going on in the social media, someone just state their opinion and never thinks about the consequences, do not know what affect their expression of opinion have.

For those who cannot attend these courses, there are other options. A well-developed webpage; gerbadnews.com – a game helps you get to know fake news. A Dutch group the DROG created this webpage against fake news, to control fake news in our surroundings, how to recognize them and defend ourselves from them. The group is made out of academics, journalists and employees of the media. The users can put on the shoes of a journalist, spread fake news and have as many readers as possible. [6]

2.3 Finland

And last but not least I would like to mention the situation in Finland, which is not surprising, that after different surveys their activity in education against fake news is at the forefront. A slide included a checklist of methods used to deceive readers on social media: image and video manipulations, half-truths, intimidation and false profiles, the title was „Have you been hit by the Russian troll army?" – The students met this in a college lecture, the goal of the course was to teach students, teachers, journalists and politicians how to recognize fake news. We can say that this initiative lead that they started to deal with how they can teach students and children about fake news. A year later officials were assigned to tackle this topic, and in this same year the educational system was also reformed; its main segment was to educate to be a critical thinker. The goal was that the student should think twice about that who wrote, from whom the information originates before they like or share something in social media.

As the diagram shows Finland is really outstanding, ahead of all the European countries it proves that they are the most resistant against fake news. At the forefront are the other northern countries, because they try to cooperate in the field of education. This result is the Media Literacy Index of 2018, which was published by the Open Society Institute in Sofia. [7]

Different studies prove that the quality of education is related to the resilience to fake news. With more knowledge and better critical-thinking skills, we can handle fake news better. Finland, Sweden and the Netherlands use digital literacy and critical thinking skills in the education for many years now. They purposefully start to educate children in the world of fake news.

A Finnish organization, the Faktabaar, aka FactBar apply professional fact analytics in schools. The organization also thinks that good searching skills and critical thinking is the key. There are

3 field in which we have to be conscious; misinformation/mistakes, disinformation, malinformation/stories. All three are a sort of fake news with which we have to be careful.

"Finland's government considers the strong public education system as a main tool to resist information warfare against the country," says Marin Lessenski, Programme Director for European Policies at OSI-Sofia. Widespread critical-thinking skills and a coherent government response are key to resisting fake-news campaigns, he says. [8] [9]

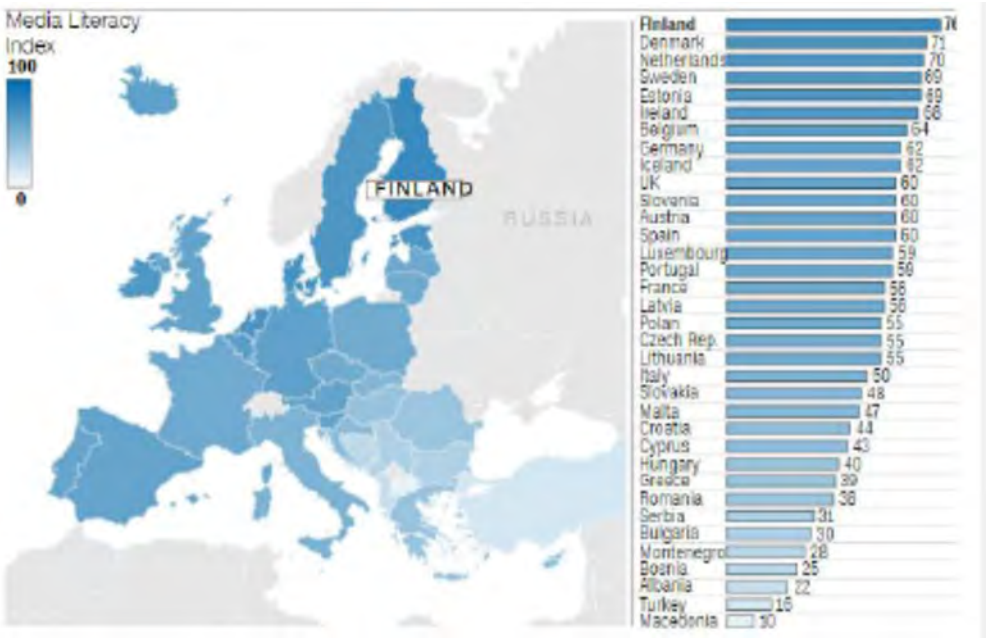

Fig. 1. Media literacy across Europe

3 Fake News in the Hungarian Education System

The Hungarian government accepted within the Digitális Jólét Program (DJP) (Digital Welfare Program) the digital child protection strategy, which would educate children to conscious Internet usage. The government would like to put a bigger emphasis on digital security, that is why it was planned to teach what fake news in schools is. They would educate not just children but the parents and teachers as well on conscious Internet usage.

For us to recognize fake news, we need a far-reaching media system, cross-reading and thorough knowledge of the text. All this can be achieved by the improvement of media literacy. That is why there are DJP Points nationwide which provide free of charge media literacy training which raises awareness of parents and sensitize them in the questions of Internet usage. This was barely competed, because itis not the whole part of the National Core Curriculum (NCC), like in other countries. InHungary the subject of media literacy is the part of the public education to this day for a 1-1 year in each class. However, in most places it is not realized. The ombudsman report of 2016 proves this case of which around 2004-2005 the subject got in the NCC, however, neither the schools nor the teachers use it. Currently the European Union is also backing this initiative, however, in Hungary the "big fake new movement" has not kicked in yet. Issues connected to digital security could also get into the new NCC, but to spread media literacy is just as important. It would be very important for children to recognize the so-called fake news, false information and recognize if they are the victims of abuse – said an expert, who thinks that the programs connected to raising awareness have already started, and professional dealing with conscious Internet usage are already helping the work of teachers in Primary- and High Schools alike.

The subject of media literacy could be the place where students could talk about this topic within school conditions, and could be leading into the world of fake news. However, the subject is in dying conditions and hard to find in schools. The topic could be journalism, different mediums, platforms, news and fake news. Besides this the subject should be based on educating to be a critical thinker, how to adapt to different media, how to react to information. Separated into different topics – language, values and norms, social sciences, politics, economics, society – would help with other subjects too.

A few programs can be found but the teachers do not know about them. Two associations who represent the same values are the Televele Médiapedagógiai Egyesület and the Urbanlegends formulated a concept by the fake news. The association has already created the Drone Program in 2016 which created different educational methods for Primary- and High School students to examine the creditability and reliability of information. The platform teaches the students how they can orientate themselves using critical thinking inside an informational medium. Unfortunately, nowadays this is not really successful because we meet with a lot of unfiltered information and we cannot be certain of anything in the golden age of social media. Our environment constantly in change and more and more information surrounds us. On the other hand, it compels us to reach as much information as quick and easy as possible. This rushing world incites us for this. That is why the program was created to teach the students, target audience a mechanism with which they can filter information and helps the user to decide. This is a longer process that can birth extraordinary results. This program guides us not only to the digital worlds, it also helps to improve basic characteristics, skills, for example sense of responsibility and other competences. The program builds upon different topics depending on age; in High School topic is the information flow of social media, algorithms, filtering software, general media usage. It was realized within the supporting program of Open Society Institute Education Grassroots Activism in Hungary 2016. [10]

There are developed, constantly updated curricula and tasks that teachers can use anytime, which was created by the above-mentioned Televele association. However, to be part of the program the teachers must attend an e-learning courses, where they become acquainted with the topic, and get an overall picture. The co-workers of the association also give courses for the teachers.

The students during the course can practice fact checking methods, what tools they can use to find out if a picture is real, which in a world of deep-fake videos and Photoshop is essential. During the course they create a “portfolio”, they gather real and fake news, create memes, write their own news, because with all these they meet with a lot of different points of view.

4 Conclusion

My study concentrates on different strategies which are useful in the area of fake news and media competency in teaching. I found it very important that more and more countries integrate this into their curriculum, because with this constant improvement of technology people and actual information tends to get lost. On each platform most of the time, we cannot follow what is going on in the world. That is how they use the naivety of the people. It is worth dealing with this topic at childhood in the educational processes. It makes me sad to see that how a lot of parents deal with their crying child nowadays. They give them a digital device, phone, tablet. Why? I ask the question and so does many others. These devices contain an immense danger source not just for children but later for teenagers either. That is why I find the appearance of fake news very important in education. In my following study, I would like to deepen the different practices, get to know new ones and to assess the opinion of the teachers who are and will be working in Hungarian public education.

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