Tampere University

Zahra Aemaebasir

PUBLIC LIBRARIANS AS DIGITAL LITERACY AND FACT-CHECKING PROMOTERS

Library and Information Science Experts' Perspective

Faculty of Information Technology and Communication Sciences
Master's Thesis
May 2022

ABSTRACT

ZAHRA AEMAEBASIR: Public Librarians as Digital Literacy and Fact-Checking Promoters: Library And Information Science Experts' Perspective
Master's thesis
Tampere University
Digital literacy education
May 2022

Emerging of the concept 'information disorder' in the Council of Europe's report in 2017 implies the importance of harmful information and their potential damage to societies and the sustainability of their democracy. Hence, digital literacy and fact-checking as possible solutions have been discussed and defined. The skills can help the citizens in order to consume information and act in the society in a safer approach. Public libraries are safe and trusted spaces for educating citizens on these concepts and providing them with credible information.

This study was shaped and implemented with the purpose of understanding Finnish Library and Information Science (LIS) experts' perception of public librarians as promoters of digital literacy and fact-checking. For answering the questions of the study, qualitative research approach was implemented and ten LIS experts from four universities across Finland were interviewed via semi structured interviews. The collected data were transcribed and analysed thematically.

The findings of the study revealed that LIS experts believe digital literacy and fact-checking as information seeking behaviour concepts are different aspects of information literacy concept which is the most dominant concept in basic LIS studies. They confirmed the important role of public librarians in providing digital literacy and fact-checking education, mediation, and services for society members and believed that pedagogical, communicational, digital literacy, and information literacy skills are crucial for fulfilling their roles. Finally, findings showed that LIS programmes as basic public librarians higher education trainings have embedded digital literacy and fact-checking education while the concepts are not clearly formed while the most needed pedagogical skills are missing from the information studies compulsory courses.

Keywords: Digital literacy, Fact-checking, LIS experts, Public librarians

Contents

1 INTRODUCTION 1
2 CONCEPTUALIZING THE FIELD OF STUDY 4
2.1 DIGITAL LITERACY AND FACT-CHECKING 4
Digital literacy in the digital environment 4
Fact-checking addressing information disorder 6
2.2 LIBRARIANS AS PROMOTORS OF DIGITAL LITERACY 8
Public libraries in Finland promoting digital literacy 8
LIS education in Finland 10
2.3 MAPPING AND RESEARCH QUESTIONS 16
3 IMPLEMENTING THE STUDY 19
3.1 RESEARCH DESIGN 19
My journey 19
Qualitative research 20
3.2 DATA COLLECTION 21
Semi structured interview 21
Interview guideline 22
Participants and implementing the interview 23
3.3 DATA ANALYSIS 25
Transcriptions 25
Thematic analysis 26
3.4 ETHICAL CONSIDERATIONS 27
Consent, anonymity and privacy 27
Collected data storage management 28
Limitations 28
4 FINDINGS 29
4.1 PRESENTING AND MAPPING OF THE FINDINGS 29
4.2 THE MATTER OF LITERACIES 29
Digital literacy as information literacy: concept confusions in LIS 29
Digital literacy: contextual and skill-based 31
Information disorder and fact-checking as social phenomena 33
4.3 SURVIVAL SKILLS AND KNOWLEDGE IN DIGITAL SOCIETIES 38
Knowledge and understanding of the context 39
Skills: technical and non-technical 40
4.4 PUBLIC LIBRARIES ON EDGE 44
Public libraries in Finland: duties, challenges, and advantages 44
Public librarians: educators and mediators 48
Finnish public librarians: ready but not ready 52
4.5 LIS: A CROSS-CUTTING FIELD 54
5 DISCUSSION 58
5.1 PERCEPTION ON DIGITAL LITERACY AND FACT-CHECKING SKILLS 58

5.2 FINNISH LIBRARIANS' CRUCIAL SKILLS AS DIGITAL LITERACY AND FACT-CHECKING PROMOTERS 59
5.3 TEACHINGS AND TRAINING FOR FINNISH PUBLIC LIBRARIANS 60
5.4 IMPLEMENTATION OF THE FINDINGS 61
6 CONCLUSION 62
REFERENCES 64
APPENDICES 70

1 INTRODUCTION

Hearing the term ‘fake news’ has turned into a daily routine for most of the audience of social media. Hearing about it, its dangers, its threats, but is it indeed possible to see it through every line being read second by second on different social platforms? It is painful to wear sceptical and negative lenses while looking at everyone and everything. Fear, distrust, and insecurity are the results of such an environment; where one doesn’t have the chance to take a breath before the next headline pops up on the screen while one still doesn’t know the truth of the previous one.

But how did it all end up with this dystopian-like future? Looking back at the history of the societies, using deceptive methods and manipulation have always been there and it can be considered as old as the language itself. But the term ‘fake news’ came to the spotlight when it was used by Donald Trump during the 2016 US Presidential election and then appeared more on social media while the search for the keyword on Google increased significantly (Derakhshan & Wardle, 2017). While looking for the truth is what logically should be done, unfortunately relying on one’s emotion and beliefs for decision making regardless of the objective veracity of the information and data, and guided information consumption behaviour of people makes combating fake news and its consequences very difficult and slow (Cooke, 2018).

The dangers and threats of this chaos in information systems are undeniable, and the political process is dependent on the proper circulation of reliable information. With no reliable information, proper political decision-making by citizens will be disturbed. Already, figures show the decrease in people’s trust in politicians and public figures and without combating harmful information in a proper way, the loss of trust in scientists and the academic community will bear irreparable consequences on huge scales (Buckingham, 2019; Wardle & Derakhshan, 2017). Fake news and mis/disinformation always have been with us, but the transition from web 1.0 to web 2.0 has changed the linear organization of the society drastically and today, social media is posing risks towards democracy because social media has the power to shape public opinion and affect the voting and participation in society (Frau-Meigs, 2019).

Over the past few years, policymakers have increasingly shifted their attention to digital literacy as a potential solution to the information disorder problem (Buckingham, 2019). And a digitally literate individual is considered a person who can make use of the different digital tools to access and retrieve one's needed information while having the ability to question and discern whether the source is reliable and credible or not. This person creates content and contributes to society by reflecting his/her ideas to actualize democracy (Hobbs, 2017). For obtaining real digitally literate users, providing education for them to understand these technologies is necessary (Buckingham, 2015). A population with digital literacy skills can function better in a knowledge-based economy and is less vulnerable towards undesirable incidents (Lankshear & Knobel, 2015).

One of the suggested digital literacy skills addressing the fake news phenomena was fact-checking which was emphasized especially after the 2016 US Presidential election and its spotlight is on the dangers of fake news to address it directly and more seriously. Traditionally, fact-checking can be associated with fact-checking organizations that focus on already publish statements and claims of official sources such as politicians and news reports (Wardle, 2018). This type of fact-checking is done after a claim becomes public and makes the source (usually politicians and public figures) accountable for the truthfulness of their claim (Mantzarlis, 2018).

While the proliferation of digital technologies has turned the tides towards an info-deluge time, it also has enhanced the capabilities of librarians in organizing, retrieving, analysing, and sharing information in both print-based and digital forms. The recent global experience on COVID-19 has justified the role of librarians in times of pandemics in avoiding the unnecessary dangerous anxiety and panic. Librarians help relieve the burden through utilising the literacies and mobilizing the knowledge, skills, and material resources. Chisita (2020) has emphasized the role of librarians in the COVID-19 pandemic through collaboration with other stakeholders and equipping the citizens for making conscious decisions and believes that a strong and lively library system that provides reliable and convenient resources to address misinformation and fake resources on the internet and social media platforms can reduce the pressure on the national health infrastructure. Since information disorder is the result of incoherence on the internet, LIS professionals can provide consistency by playing the role of information filter and bringing professional suggestions on the ways of deciphering truth by logical coherence. (Chee, 2020).

Lankes (2016) believes that since the 1970s there has been a growing approach to dividing the library and information. In this approach, 'information professional' are more valued in banking, financial and digital technology sectors and their skills in information retrieval, knowledge management, and information organization are needed, while the library science sector is seen as limited to services and human mediation where their skills are more in cataloguing and reference services. This approach has resulted in the expansion of the LIS towards becoming multidisciplinary; and rather than developing the skill set of librarians the field has been defining them outside the context of libraries and as a result, ending up with divergence of the LIS field. In order to fulfill their role as empowering agents of the communities, librarians need to understand data, technology, and automation, and information professionals need to understand that systems represent values. To close the division between library and information scientists, both parties need to recognize the other party's value and understand all positions taken by each party's professionals are a gain and the expansion of the field professionals help with the improvement of the society. (Lankes, 2016)

Efforts have been put into finding technological solutions to the proliferation of misinformation, and disinformation in current online informational spaces. Rubin et al (2015) and Rubin (2017) have studied algorithmic solutions to the fake news and automated deception detection and rumour busting techniques to complement and enhance discerning truth from deception, both in the news consumption and production. This research, however, focuses on the human mediation role of the librarians in digital information consumption and digital behaviour and how LIS education can result in the fulfilment of this role. As the future librarians are considered as trusted agents of information mediation in the society, LIS students' comprehension on the current information circulation in the world, proper skills to discern the reliable resources, and the ability to support the citizens is a vital element. Revealing experts' perceptions on digital literacy skills and fact-checking is important since these perceptions can direct library services, and form how digital literacy is practiced in libraries (Buschman, 2017, 2019).

2 CONCEPTUALIZING THE FIELD OF STUDY

This chapter is the research's conceptual framework and its contextual background. It starts with defining the key elements considered as the core of the research which consist of the notion of digital literacy and fact-checking and their currents status in Library and Information Science (LIS) professions and higher education in Finland. Finally, the role of public libraries is discussed, and the mapping of the research is provided.

2.1 DIGITAL LITERACY AND FACT-CHECKING

Digital literacy in the digital environment

Freedom for online information is a democratic principle, but since social media has provided a space for political conflicts to influence on non-democratic basis, they cannot be considered inherently democratic as well. The contradictory function of the new technologies showed that while they can empower citizens by giving them a voice, they are 'bendable toward the aims of censorship and exclusion'; i.e. exploitation of open information by implying intentional censors to silence opposing voices (Tucker et al., 2017).

With the growth of media convergence, 'information' and 'media' boundaries have become more intertwined and while in many resources, 'digital' and 'media' literacy are used interchangeably, there might be a slight difference that can make their realm of description more evident. Buckingham (2015) has derived the definition of 'digital literacy' from 'media literacy' concept; and for better mapping of the field, he has suggested a basic conceptual framework to create a possibility of defining every digital media through it. Based on his framework, a digitally literate individual a) has the ability to question the motivation and the reliability of the resource (representation), b) is aware of the structure and function of digital media and websites (language), c) is aware the global influence of advertising, promotion, and sponsorship on the nature accessible information (production), and d) is aware of the guided access to information and its manner in attracting the users (audience).

Baron (2019) emphasizes the interactive nature of the new digital technologies and explains that digital literacy is beyond simply being able to read digitally mediated information. He defines digital literacy as a necessary set of skills for an active individual in the current internet-saturated society and defines a digitally literate person who has the ability to a) access information through digital tools, b) navigate through different digital platforms, c) read and understand the content of digital media, and d) use digital technology to contribute to the modern digital information economy.

Also, Hobbs (2017) considers digital and media literacy as a lifelong learning process and defines it as a collection of knowledge besides skills and competencies that are crucial for an individual living in a technology-saturated culture. She believes a digitally literate individual is able to a) access, explore and discover the related and needed information through a strategic process of search, b) analyse the retrieved content critically, c) create content based on the acquired ideas thoughts via creative motivations, d) reflect on one's created contents' validity and quality, and d) take action to reach the audience and document the final work. The whole process is abbreviated to AACRA (see Figure 1) which is done using a broad range of digital tools, forms of expression, and communication strategies while creativity is a vital aspect of it.

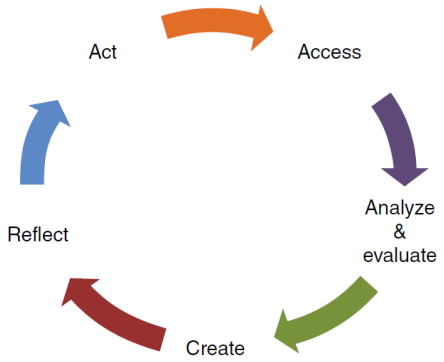

Figure 1. The AACRA model of digital and media literacy (Hobbs, 2017)

Global Digital Literacy Council (GDLC) also has provided a framework for defining a digitally literate individual's skills through 'Standardized operationalizations' through the Internet and Computing Core Certification (IC^3) program provided by Certiport. The test includes a) the ability to use a computer device hardware effectively, b) the ability to operate windows and common computer software, and c) the ability to use internet activities such as working with browsers and sending emails (Lankshear & Knobel, 2015).

While Buckingham (2015) highlights the knowledge-based aspect of the digital literacy and the importance of awareness of the structure of the digital environment in order to behave accordingly rather than the ability of simply using the digital technologies, GDLC (Lankshear & Knobel, 2015) put emphasis on the skills that can be measured through a test and provides a measurable framework to indicate the abilities of a digitally literate individual.

On the other hand, Hobbs (2017) and Baron (2019) have combined the skills and knowledge in their definition and pointed out the capability of using the digital technologies as a basic ability to enter the digital environment and demanded the digitally literate individual to actively participate in the society through digital means.

Fact-checking addressing information disorder

Although there is much more to digital literacy than just the technical aspect of knowing how to use computers and digital tools, Buckingham (2007, 2019) provides a more flexible framework in which digitally literate individual is expected to be able to discern accurate facts through efficient searching and comparing different resources. He believes a digitally literate individual questions the credibility and interest of the information producers and understands how the development of technologies is related to social, political, and economic aspects of the society. This framework shows the critical importance of awareness towards possible dangers and mishaps and the complexity of the types of information a user might come across while navigating through the digital platforms. While technical solutions are considered as one of the ways to address this issue, this solution requires the responsibility of the technology companies towards the published content, another recommended solution is to educate and equip the audience and information consumers.

Buckingham (2019) believes different types of problematic information such as fake news, hoaxes, algorithmic biases, lies, alternative facts, propaganda, etc. are the symptoms of the new era called post-truth and not the problem itself. The suitable umbrella concept to cover all the mentioned types of the information above might be ‘information disorder’ that has been broadly explored in the Council of Europe’s report published in 2017. The report suggests avoiding the usage of the term ‘fake news’ as the general concept since it is inadequate to address the phenomena of ‘information disorder/pollution’ and can be used by politicians to

create confusion and suppression towards the free press and opposing organizations (Wardle & Derakhshan, 2017). In this research, the term 'information disorder' has been used to address this issue as a broader concept and to avoid multiple labels which might differ and overlap in meanings.

The increase access to information and the platform-oriented structure social media has ended up with difficulty in evaluation of the content which spreads widely with no filtering, fact-checking, or editorial judgment (Allcott & Gentzkow, 2017; Kohnen & Mertens, 2019). Fact-checking as a solution to tackle the phenomena of information disorder is originally professionalized in journalism where fact-checkers are employed to proofread and verify the news before its distribution. While these professional fact-checkers are acting in the pre-release phase, information consumers and media audience are on the other end of the information distribution where the news and information are already released and shared at a higher speed to the public as questionable facts (Mantzarlis, 2018). Fact-checking and debunking skills encourage the questioning and critical thinking behaviour of the digital information consumer about the reliability of the information and its source. Fact-checking can be considered as a thorough evaluation and analysis of the facts in the information where the audience considers the information influential on one's daily life. This is the second skill in the set of skills defined as digital literacy by Hobbs (2017) which is the chosen definition for this research.

There are no definitions for fact-checking since it is considered as a professional skill, however based on Mantzarlis (2018) fact-checking consists of three phases

> *"1) finding fact-checkable claims by scouring through legislative records, media outlets and social media,*
>
> *2) finding the facts by looking for the best available evidence regarding the claim at hand,*
>
> *3) correcting the record by evaluating the claim in light of the evidence, usually on a scale of truthfulness" (2018, p. 84).*

While the above guideline aims for journalists, IFLA (2017) provides an easier instruction as an on-spotting fake news for public users which includes 1) evaluation of the credibility of the distribution source, 2) considering the context and the whole scope of the content, 3) evaluation of the credibility and actuality of the author, 4) considering the

possibility of satire nature of the content, 5) spotting personal bias on the judgmental skills, and 6) referring to experts such as librarians. This process does not necessarily end up with correcting the data, rather it provides a stap-by-step guide on checking the credibility of questionable information at hand which is more practical and beneficial for the public audience.

2.2 LIBRARIANS AS PROMOTORS OF DIGITAL LITERACY

Public libraries in Finland promoting digital literacy

Before the vast development in the digital technologies, librarians have been in a tight relationship with information and its credibility and truthfulness. The evaluation process usually happened before curation of the libraries' collections to provide the library users a controlled environment and credible collection of information to use with no worries. The advent of internet gave unlimited access to information seekers and shifted the role of librarians towards digital and media literacy educators and promoters (Russo et al., 2019; Walsh, 2010).

Based on a recent study by Fontanin (2019) librarians consider their potential effective role in combating information disorder as 'curators of information' and as 'educators to critical thinking'. Despite librarians' perception on their own role, their role and effect has not been acknowledged by national and international organizations and specifically, by the press which can be considered as the expression of the public perception. They are not considered as stakeholders in this debate and their role in taken for granted due to their lack of independence in organizational systems. However, Fontanin believes although libraries are slow for the current informational ecosystem, but they are valuable to preserve democracy. Libraries need to make themselves visible and make networks to other stakeholders such as schools, universities, journalists as well as internet platforms and the economic institutions (Fontanin, 2019).

Spurava et al. (2022) revealed in her that public librarians' unawareness of their roles and responsibilities in addition to their lack sufficient digital technical skills put public librarians in the risk of losing motivation for taking up digital literacy mediator roles. Thus, supporting librarians in filling their technical and knowledge gap helps with the enhancing their capabilities in order to fulfil these supportive roles in the society (Spurava et al., 2022).

Also, in the mapping study in higher education by the ERASMUS+ European Cooperation Project on Disinformation and Fact-Checking Training 2019-2022, libraries mostly were favored as collaborators in teaching fact-checking together with media institutions. Mapping study was covering the partnering countries as Portugal, Finland, France, and Poland. Based on the study, education has been developed in the ERASMUS+ project on tackling the information disorder and acquiring digital literacy and fact-checking skills. One of the educational experiments was implemented as master thesis at Tampere University (Tekoniemi, 2021; Tekoniemi et al., 2022). The current master thesis study is the second one linked to the project.

Lor (2018) in his article suggests six roles for librarians for an effective movement counteracting information disorder:

1. Building collections with a neutral mindset and balanced perspectives.
2. Providing information with careful evaluation in response to reference questions.
3. Educating users critical evaluation of information sources, critical thinking and critical media literacy.
4. Refuting fake news with fact-checking with the objective of correcting misinformation for the keeping historical record objectively.
5. Rescuing data and methodically downloading and preserving copies of official and governmental databases to avoid intentional disappearance or change in these data.
6. Providing a safe space where people of all ages, genders, religious beliefs, etc., are welcome to safely access all information resources.

In Finland, the National Media Education Policy (2019) provides guidance for development and practice of media education and media education has been promoted in different sectors emphasizing its importance by providing funds in public and private sectors. The Ministry of Education has provided a guideline and funds to establish media education in public libraries and the Finnish Public Libraries Act (2016) requires libraries to actualize media education central objectives such as ‘versatile literacy and active citizenship, democracy and freedom of speech’ through promoting of the free access and use of information. While in Finland, media education resources are mainly integrated and concentrated in the youth basic education curriculum and teacher education programs, and since in Finland school libraries are less common compared to many other countries, public libraries try to fill this absence through

their constant contribution with schools. Although media education has already become part of Finnish public libraries' activities and services and has been expressed through a variety of literacy skills teachings, yet there are no clear opinions on the job description (Salomaa & Palsa, 2019).

Even though media education in Finnish public libraries is also provided for adults, the most supported activities as fulfilling defined pedagogical objectives are children's media literacy (Heinonen, 2019; Sallmén, 2016), and although in Finnish schools, the teachers have the authority to execute the education and design curriculum, libraries and librarians fulfil only a supportive role and do not necessarily participate in curriculum making while they are constantly working with teachers to support student's literacy motivation (Kurttila-Matero, 2011; Ojaranta, 2019). It is necessary to investment more in drawing up a media education map in Finnish public libraries' work to support all target groups, and provide more cooperation with other libraries in the network in order to implement media education in libraries (Lahtinen, 2018). In conclusion, the implementation of media education in the best possible way, aside from the common content guideline, needs muti-skilled professionals who have the competence to further develop and support media education in the libraries (Sallmén, 2016). Since librarians play a key role in organizing media education in libraries, staff in children's wards in particular should have media education and pedagogical skills. These skills should also be taken into account in librarians' training and education (Helminen, 2016).

LIS education in Finland

The qualification of public libraries staff in Finland is defined by The Public Libraries Act (2016) which guarantees the professionalism and education of the employees. Based on the Act, while the director of municipal library services should have suitable master's degree and staff members in expert positions should have a suitable higher education degree based on the nature of their position, at least 70 percent of the public libraries staff should be trained in library and information sciences. The degree for a qualified librarian is either a polytechnic or a university degree that includes at least 60 ECTS points in library or information sciences and graduation from vocational, or apprenticeship programmes suffices for library assistant positions in public libraries (Haasio, 2011; Ministry of Education and Culture, 2016).

Currently in Finland, only three universities of Tampere, Oulu and Åbo Akademi including Seinäjoki University of Applied Sciences (SEAMK) - the only polytechnic/applied sciences university in this group - provide library and information science studies programme. Table 1 is a summary of the current programmes (2021-2022) in all mentioned universities which have been published on their official curriculum platforms. The information provided in the table might differ due to universities' constant changes in their running programmes, but it provides a brief overview on current 'LIS/Information Studies' degree programmes and related courses provided in them with more details of their credits and subjects.

University	Degree	Programme title	Course name	Subject	ECTS	Type
Tampere University	Bachelor's	Multidisciplinary Communication Studies (BSc, BA, BSSc)* **Faculty:** Information technology and communication sciences (ITC) **Length:** 3 years **Language:** Finnish	Digital Skills 1, 2, 3	Technical skills & Content production	3	Compulsory
			In the News: Viewpoints and Values Represented in International Media (B2)	Media literacy	2	Elective
			Discuss and Influence in Media (B1)	Media literacy	2	Elective
			Basic studies: Media, Everyday Life and Society	Media literacy	5	Compulsory
			Basic studies: Information and media systems	Information systems	5	Compulsory
			Intermediate studies: Information retrieval	Information retrieval	5	Compulsory
	Master's	Informaatiotutkimus [Information Studies, (MA, MSc)**] **Faculty:** Information technology and communication sciences (ITC) **Length:** 2 years **Language:** Finnish	Advanced studies: Information retrieval methods	Information retrieval	5	Compulsory
			Advanced studies: Web science	Navigational skills & Digital platforms knowledge	5	Compulsory
			Advanced studies: Recommender Systems	Digital systems knowledge	5	Compulsory
			Advanced studies: Media literacy in digital society	Media literacy	5	Compulsory
	Doctoral	Media and Communication Studies and Performing Arts (DPMCP) (Darts, PhD, DSocSci)*** **Faculty:** Information technology and communication sciences (ITC) **Length:** 4 years **Language:** English	-	-	-	-

Oulu University	Bachelor's	Information Studies (BA) **Faculty:** Humanities **Length:** 3 years **Language:** Finnish	Basic studies: Introduction to Information Processing Sciences	Information seeking and retrieval skills & Information evaluation skills	5	Elective
			Basic studies: Information Security	Digital environment safety knowledge	5	Elective
			Basic studies: Fundamentals to Information Systems	Information systems knowledge & Ethical behaviour in digital environment	5	Elective
			Intermediate studies: Literacies in Different Information Environments	media and information literacy	5	Compulsory
			Intermediate studies: Information Seeking and Retrieval	Information seeking and retrieval skills	5	Compulsory
			Evaluation and organization of information contents	Information evaluation skill	5	Compulsory
	Master's	Information Studies (MA) **Faculty:** Humanities **Length:** 2 years **Language:** Finnish	Advanced studies: Research on Information Seeking and Retrieval	Information seeking and retrieval skills from research perspective	5	Semi elective
Åbo Akademi University	Bachelor's	Informationsvetenskap [Information Studies] Under the degree "Social sciences" (BSSc) **Faculty:** Education and Economics **Length:** 3 years **Language:**	Basic studies: Information seeking	Information seeking and retrieval skills	5	Compulsory
			Basic studies: Information Society	Information systems knowledge in the context of Finnish society	5	Compulsory

		Swedish				
	Master's	Governance of Digitalization **Faculty:** Social Sciences, Business and Economics **Length:** 2 years **Language:** English/Swedish	Information Behaviour I	Covers digital literacy concept as one type of literacy	5	Compulsory
			Module 2: Information users and usability Information Retrieval	Information seeking and retrieval skills & Information evaluation skills	5	Compulsory Under module
Seinäjoki University of Applied Sciences (SEAMK)	Bachelor's	Kirjasto- ja tietopalveluala (AMK) [Library and Information Services (BSc)] **Faculty:** School of Business and Culture **Length:** 3,5 years **Language:** Finnish	ICT Skills	Technical skills	3	Compulsory
			Media Education and Multiliteracies	Media literacy	5	Compulsory
			Information retrieval and organization	Information seeking and retrieval skills & Information evaluation skills	5	Compulsory
			Information retrieval 2	Information seeking and retrieval skills & Information evaluation skills	5	Compulsory
			Information seeking	Information systems knowledge & Information seeking and retrieval skills	5	Compulsory
			Social media 1	Social media systems knowledge & Information evaluation on social media	5	Compulsory
			Social media 2	Content creation on social media	5	Compulsory

	Exchange	Gateway to Library and Information Studies [25 ECTS in LIS] **Faculty:** School of Business and Culture **Length:** One semester **Language:** English	Media Education and Multiliteracies	Media literacy	5	-
			Introduction to social media	Social media systems knowledge	5	-
			Renewing Media	Content creation	5	-

Table 1. Summary of LIS programmes and their curriculum in Finland (2021-2022)

* BSc: Bachelor of Science; BA: Bachelor of Art; BSSc: Bachelor of Social Sciences.

** MA: Master of Art; MSc: Master of Science.

*** Darts: Doctor of Arts; PhD: Doctor of Philosophy; DSocSci: Doctor of Social Sciences.

Library and Information Science programmes in Finland graduate information professionals for a wide range of work tasks. In the curricula, the library sciences have been merged and replaced by new research trends as information retrieval and data acquisition, and even more recent research trends in document management and interactive media (Strömberg, 2020). There are no courses arranged with the titles of 'digital literacy' and 'fact-checking', but courses such as 'information seeking' or 'information retrieval' are almost in all programmes although the title might be slightly different or in Finnish. Moreover, it can be said that the courses closest to digital literacy and fact-checking in the curriculum of the universities can be considered 'media literacy' and 'information literacy'.

Library and Information Science is reputable for its trustworthiness and steadfastness. Thus, the filed must become more flexible through multi-disciplinary approach and adaptable mindset in order to be more effective. It is possible to contribute in creating solutions in collaboration with other stakeholders and professionals to maintain the relevancy in the ever-changing information environment (Cooper, 2021).

2.3 MAPPING AND RESEARCH QUESTIONS

Hobbs (2017), Buckingham (2019) and GDLC (2015)'s guidelines on digital literacy definition and skill sets, and IFLA's (2017) instructions on fact-checking, concepts and Lor's (2018) guideline on librarians' duties towards information disorder create the main conceptual framework in this study while their differences and similarities are the key to dissect how libraries and specifically, public libraries have the capability to address information disorder and empower community.

Following the public libraries' roles and duties, in this study, comprehending and teaching of fact-checking skills as digital literacy at higher education in the LIS field in Finland is going to be studied with the aim of demonstrating the status of Finnish public librarians' preparation and training for promoting digital literacy and fact-checking. Since the educational programmes in universities are provided by the university professors, lecturers, instructors and researchers - called as 'experts' in brief in this research – and their perception on the specific concepts shapes the final outcome in the training and educating process, Finnish LIS experts have been interviewed on their perceptions of digital literacy and fact-checking skills to answer

the research questions. ‘Figure 2’ represents of the conceptual framework generated based on the mentioned literature and creates the basis for answering the question of this study.

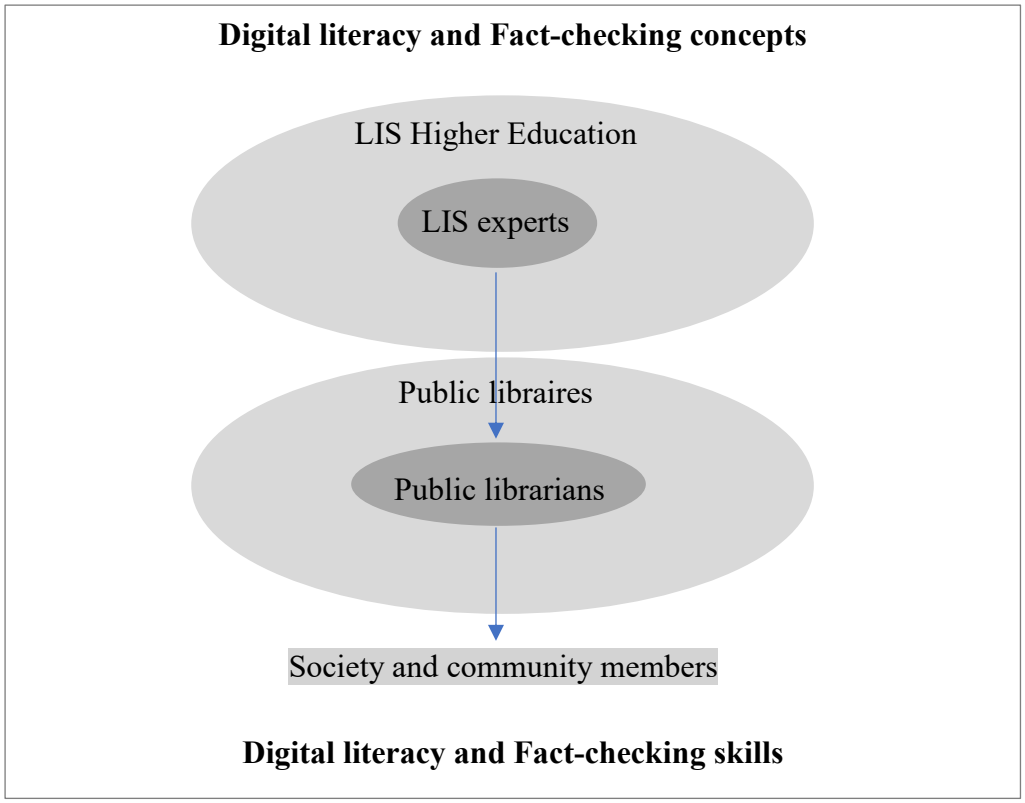

Figure 2. Mapping of the conceptual framework

The research question for this study is formulated as:

What kinds of perception Finnish Library and Information Science (LIS) experts have of public librarians as promoters of digital literacy and fact-checking?

And the following sub questions create a guide to answer the main research question:

- What skills are perceived as necessary for digital literacy and fact-checking in the LIS field?
- What are the roles and duties regrading public librarians as digital literacy and fact-checking promoters?
- What are the teachings and trainings provided for the Finnish librarians by LIS field academics to support their roles and duties?

The differences and similarities of different LIS academic institutions approach are discussed in the 5th chapter based on the finding of research question.

3 IMPLEMENTING THE STUDY

In this chapter the methodology of this qualitative research is introduced, and the data collection methods process, and usage of the semi structured interview and data analysis methods are discussed in detail.

3.1 RESEARCH DESIGN

My journey

At the beginning of the Thesis Seminar course in autumn 2020, the idea for my thesis was focused on an action research study and creating a fact-checking workshop for Latvian librarians. This idea was ingrained from my devotion and joy for public libraries as someone who has worked as a public librarian in Iran for 5 years, and my curiosity and interest in fact-checking though the workshop I had designed with my classmates for high school students of Tampereen teknillinen lukio during DLES05 Project Studies course in October 2020. On the other hand, my idea was similar in content with another classmate but different in the context which was encouraged by my supervisor.

However, the COVID-19 cancelled all the possibilities of travel and the context of the workshop changed to Finland for feasibility convenience. Since conducting the research with the Finnish public librarian's participation was required with acquiring specific permissions from the municipality and the time for obtaining the permissions was rather lengthy, hence the target group changed to Tampere University LIS students. At the same time, due to pandemic restriction and the semi-shut down status of the university, the subject of the research was modified to 'understanding the perceptions of LIS students on fact-checking as digital literacy'. I started reaching out the students through emails and via contacting university faculties, university coordinators and instructors, student union, and public library directors during December 2020 and January 2021. Though, by February 2021, only two female students replied to my contact through one of the public library directors and they accepted the invitation for the interview.

By the end of Spring semester 2021, my supervisor decided reaching the student through electronic means was not successful and it is better to change the target group towards the field experts and changed viewpoint of the study from the educators' perspective which could be considered in line with the ERASMUS+ project conducted with cooperation of 7 higher education institutes within European countries (*European Cooperation Project on Disinformation and Fact-Checking Training*, 2019). And ultimately, the final title of this study started with "Library and Information Science Experts' Perceptions on Fact-Checking as Digital Literacy" and later changed to the current tile to reflect the study more comprehensively. Therefore, this study aims to understand the perceptions of experts of Library and Information Science (LIS) on public librarians as digital literacy and fact-checking promoters. Due to the pandemic and its restrictions on the process of conducting the research, the initial action research and to help answering the main question of this study it was eventually changed to qualitative research.

Qualitative research

Qualitative research method is considered a post-positivism approach that rejects the idea of considering the participants as subjects of the study and isolating them for observation and generalizing the results of the study. This method provides the possibility and flexibility of studying the perceptions of people within their context and experience. Based on the 'social construction of reality' concept, understanding of people should be examined through the larger context where their function with knowledge can be observed (Cohen et al., 2007; VanderStoep & Johnston, 2009). Qualitative researchers pick the inductive approach through their reasoning and data analysis. In this approach, researcher builds the themes and patterns after data collection and tries to avoid hypothesis and preconceived idea. The whole research is done to figure out the meanings out of the collected data (Creswell, 2014; VanderStoep & Johnston, 2009).

Since 1980s, there has been a steady growth and interest in the employment of the qualitative research method in the Library and Information Science field (Togia & Malliari, 2017). There are arguments that believe qualitative research is a beneficial research method for the LIS field since: a) the focus of the field is on 'communities of meaning' and preservations and mediation of the knowledge (Sutton, 1993); b) and instead of borrowing theoretical

frameworks from other disciplines, it is crucial to comprehend the context and develop theories that can help with answering to research questions that are multidimensional and include different perspectives (Afzal, 2006).

This study is a try to understand the *perceptions* of the LIS experts on the concept of digital literacy and fact-checking skill and the role of current LIS students as future public librarians and promoters of digital literacy and fact-checking, i.e., the starting point is empty of presumptions and the themes will be created based on the collected data; hence, the method of the study will be qualitative. The other reason for the implementation of the qualitative research is due to the nature of the main question of this research, which is dynamic and free of right or wrong.

3.2 DATA COLLECTION

On the first modification of the thesis idea and its change from action research to a qualitative one, the aim of the study was defined as a try in comprehending the perceptions of LIS students on fact-checking as digital literacy. Later, the research was subjected to changes again, the concept of the main research question was more or less the same considering the context of public libraries, but this time the target group was changed to LIS experts and the sub questions were modified to enhance the process of the research. Hence, the selected tool for data collection remained the same and through semi structured, individual interview was rendered as the suitable tool for collecting the related data to answer the main question.

Semi structured interview

Interviews are a commonly applied tool in qualitative research and Wildemuth (2017) states that the goals from implementing interviews are "access to people's experiences and their inner perceptions, attitudes, and feelings of reality" (2017, p. 239). The qualitative interviews are conducted face-to-face, and researcher interviews the participants using unstructured and generally open-ended questions that are few in number and intend to elicit views and opinions from the participants. There are advantages and limitations to interview as a data collection tool. While qualitative interviews can give a voice to marginalized and sensitive groups, on the

other hand, there is a risk of posing personal bias by the researcher during the interview conduction (Creswell, 2014). Application of the qualitative interviews is done with the goal of improvement in comprehension of social and cultural phenomena and their processes and avoiding the sheer objective view on reality and generalization of its results (Meho, 2006).

There are several categorizations on interview types based on the *degree of interaction* between the researcher and the interviewee, and the *structure* of the interview and in the latter type can be divided into three categories: structured interviews, semi structured interviews, and unstructured interviews. While structured interviews are made up of a set of predefined questions and all the interviewees will be interviewed all in the same manner with no change in the questions, and unstructured interviews do not have fixed questions or answers and rely on the social reaction between the researcher and the respondent (Wildemuth, 2017).

The semi structured interview is close to *interview guide approach* of Cohen et al. (2007) and VanderStoep & Johnston's (2009) *guided interview*. Semi structured interviews' characteristics include themes and questions are prepared prior to the interview; however, the researcher/interviewer has the freedom to deviate from the interview questions and guide the participant in answering to more questions that seem to be useful or important for the study results. In this case, the completed interviews done with all participants might differ in some topics at the end (Cohen et al., 2007; Moser & Korstjens, 2018; VanderStoep & Johnston, 2009).

Interview guideline

The collected data in this study was only from the conducted interviews and via the semi structured question derived from the main and sub questions of the research with reference to the questions provided previously in the Erasmus+ Project 'European Cooperation Project on Disinformation and Fact-Checking training' (2019).

Since the participants were all in higher position compared to me and in order to keep proper academic etiquettes, based on the recommendation of my supervisor, the format of the guideline of the interview questions were modified and constructed in the format of discussion topics. The guideline was verified by my supervisor and then presented to the participants a few days before the interview through emails. This format in a few cases was unclear for the

interviewee and during the interview, I used the freedom to break the questions and explain more about the questions that matter for the research. Thus the format of the questions asked in the interviews in nature can be considered as inductive where probing and prompting for providing more clear and elaborated answers from the interviewees' story is a common action and the interviews are not necessarily implemented all the same and might slightly be different (Guest et al., 2012).

Interview question/topics were modified from the research questions and were categorized in two major themes under concepts of 'digital literacy and fact-checking' with five subtopic and 'Finnish librarians and digital literacy education' with six subtopics (see Appendix 2) and altogether 11 topics/questions were discussed during the interviews.

I was considering on possibly expanding the topics, but I found this approach out of my skills and the possibility of getting distracted quite high. But rather than keeping with the guideline word by word, I tried to conduct the interview in a more friendly though polite discussion manner which turned out quite enjoyable.

Participants and implementing the interview

Unlike the quantitative method in which the researcher's presence during the study is almost invisible, in qualitative interviews, researcher actively collects the data while interacting and communicating with the participants. In fact, the skill of the researcher is the main element in encouraging the interviewees to share their opinion and experience (Creswell, 2014; VanderStoep & Johnston, 2009). The restrictions brought by the COVID-19 pandemic since 2020 has forced the researchers into modifying their research methods towards virtual environment and usage of digital tools while the discussion on this topic has started years earlier than the occurrence of the pandemic (Pocock et al., 2021). For example, Cohen et al. (2007) has pointed out that although using the internet for interviewing is more cost benefit, saves up time for both the interviewer and participant, and provides access to hard-to-reach groups and individuals, however, it poses bias since the participants with access and the ability of using the technology are eventually the final participants.

During the research, the LIS experts who accepted to be interviewed were residing in Tampere, Turku, Oulu, and Seinäjoki. The preferable way for reaching the experts from other

cities was the implementation of the interview in an online form to make it more convenient for the participants in distance. On the other hand, the pandemic restrictions affected this research as well, and the only possible way in which I could reach and interview the participants – even the experts residing in Tampere - was through the online platforms and thus, the interviews of the experts were conducted, and recorded in video .mp4 formats. via MS Teams software provided by Tampere University and under my personal username from the university. Ultimately, 10 experts agreed to participate in the research and the interviews were organized during 30 October and 26 September 2021. The length of the interviews was between 28 minutes as the shortest and one hour and 34 minutes as the longest interviews and most of the interviews were done within one hour time.

Cohen et al. (2007) mentions sampling for semi structured interviews is conducted on a critical basis. This approach helps with the participation of key figures or *knowledgeable people* in a field. The key features of a qualitative sampling: deliberate sampling of participants, different and small sizes of sample, emerge of the sample during the study, conceptually required sample (Moser & Korstjens, 2018). The sampling of this study was done via sending invitations to as many as possible LIS experts to participate in the study voluntarily. And ultimately, 10 experts agreed to be interviewed.

Participants in this study are LIS university professors, lecturers, instructors and researchers in Finland. They are indicated as 'experts' in brief in this research. Five participants were from Tampere University, while two participants from Oulu University, two participants from Åbo Akademi University and one participant from Seinäjoki University of Applied Sciences (SEAMK). Except one interviewee with the latest degree in Music Education field, the other nine interviewees field of study in their latest degree is either Information Studies or Information Sciences. In summary, 7 out of 10 interviewees hold the Doctor of Philosophy (Ph.D.), 2 with Licentiate of Social Sciences (Lic. of Soc. Sci) and one with Master of Science (MSc) as their latest degree of studies. The following table illustrates a brief profile of the interviewees' experience and gender (see table 2).

Interviewees	Years of teaching	Gender
P1	9	Female
P2	9	Female
P3	>10	Male
P4	28	Male
P5	>15	Female
P6	>25	Female
P7	14	Female
P8	21	Male
P9	>4	Female
P10	<1	Female

Table 2. The summary of the interviewees' profiles

3.3 DATA ANALYSIS

Transcriptions

After the first interview, I noticed that MS Teams have been updated with an ability to create docx files for the transcriptions of the recorded chats similar to subtitles. However, in order to start the analysis phase of the collected data, I needed to edit these files since they were not out of error and the speeches were not coherent in the text form and were cut down constantly with the machine-made video clock times and the name of the speaker in after every small silence.

Since for this research, keeping the details such as intonation, pauses, overlapping speech, etc. was not crucial, I chose to edit the transcriptions through pragmatic transcription approach in which the researcher tends to keep collected data that are necessary for the research and other unnecessarily details which do not carry crucial value are removed during the transcription process. Notably to say, the rest of the speech is transcribed as it is i.e., verbatim approach. Another similar approach with freedom in selection of the transcribed content is called as gisted transcript (Evers & Boer, 2012).

For this research, there were some issues that were considered during the transcription. First issue was filler words such as 'uh', 'um' and many other cases that have been added by the machine by mistake. All these words were omitted to make the answers more comprehensible. The second issue was the excessive repeated words and repeated phrases such as 'you know' or 'like' which had no meaning values and were unnecessarily cutting of the

sentences. They were also omitted while the rest of the speech was kept intact. The third case was the unintelligible words where the speaker has pronounced properly, or the speaker could not be heard clearly as a result of technical issues. In these cases, if the overall meaning of the sentence was comprehensible, the word was typed in red font to the indicate the doubt in its inaccurateness.

The final transcription of conducted interview was consisted of 55 pages of MS word file.

Thematic analysis

The main use of thematic analysis is in the qualitative research where the purpose of its application is mainly to extract and identify the essential themes that recur in the collected data. Thematic analysis starts with the collection of data and continues with the analysis of the data where the codes are created and then processed to identifying and cataloguing of the themes in order to helps with demonstrating the meaningful patterns in the findings (Braun & Clarke, 2006). Based on Braun & Clarke (2006), six phases were followed during the data analysis.

The first phase started with reading through the transcription while editing the errors. This actioned helped me to familiar myself with the process of interviews' implementation and how it was done and what the interviews' content in a whole picture looks like. The first readings also helped with discovering the general similarities and differences in interviewees opinions and moreover, the process helped the showing the first haze themes of the findings.

The second phase was after the transcription and preparation of the raw data. Here, I started the first level of code generation with translating the interview texts to consistent codes and to visualize the themes for the initial editing. For this purpose, all codes were listed in an spreadsheet Excel during the process for a better visualization and organization. In the first version, 125 initial codes were created which in the end of this level were unified in terminology and meaning.

The third phase was consisted of searching for the similar codes and extracting themes. while in fourth and fifth phases, themes were reviewed, defined and named. They were modified in their purpose and meaning to demonstrate the relations of the themes based on this

research conceptual framework (see Figure 2). Eventually, 91 main codes were used for the analysis and six themes were finalized as the main discovered themes (see Appendix 3). The main themes and their details are discussed in the chapter 4 and 5 as the final phase of analysis.

3.4 ETHICAL CONSIDERATIONS

Consent, anonymity and privacy

Since reaching to the participants was through email, the precondition for participation was naturally their willingness and acceptance to participate. After receiving a positive answer from a participant, during the next contacts with the willing participants, their preferred and more convenient date and time was scheduled for conducting the interview and I was responsible for creating the schedule on MS Teams and send the invitation links to the participants. The interview guideline in format of pdf and for notifying the participants on the discussed topic during the interview was emailed to them two to three days before the interview day.

After that start of the online meeting, the respondents were notified of the necessity of recording the interview and they were notified of the fact they can close their camera in case of not feeling comfortable with their face being recorded during the interview. And then, I usually after their agreement started to record the interview. After implementing the necessary actions, I explained to them that the 'Informed consent form template for interviewees' (see Appendix 1) was the modified version of the university consent based on the research and was prepared into a pdf file. In that stage, I shared my screen displaying the pdf file and read the content all to make sure all mentioned matters are clear, and they answered in case if there was any questions or doubt. After the participants' final and ultimate consent, we started the interview while going through the guideline.

In order to ensure the anonymity of the participants, they were indicated as P1, P2, etc., and in this indication 'P' stands for participant. In addition, in order to avoid making their identities traceable, I simplified and unified their university positions in the way which can be seen in Table 2. As a final step, all of the study was thoroughly inspected and any trace of the participants' identity that might be harmful to their privacy were removed from the files and texts.

Collected data storage management

The recorded videos are only accessible through MS Teams chat area and each interview record is accessible for me and the interviewee. In case of loss of my access in the future due to any possible technical reasons, I have created a backup of the interviews and their transcription files in a password protected file on a hard drive. And for security assurance, all names have removed from the files. These files will be preserved for maximum of two years and in case of need, they will be delivered to university and Erasmus+ project coordinators who have authority on this study for further analysis. After the pass of two all the files will be destroyed.

Limitations

With all the effort to create a robust and well-devised study, there were limitations during implementing the research and the most important one is the gender representation and was not equally represented. From ten participants seven were female while only three male participants agreed to participate. Thus, the lack of balance and robustness in this matter might have affected the results of the study. In addition, the other imbalance in the lack of equal representatives from all higher education institutions also might have resulted in inadequate representation of each institution's approach and perception towards the discussed topics in the study.

Also, one of the biggest limitations while conducting the study was the language barrier. Since English language is considered second language for both me (interviewer) and the interviewees and we are all considered with mediate to high level of skills in English, however I felt that sometimes the interviewees had difficulty expressing specific feelings or terms. In these kinds of cases, I tried my best to conclude the comments of the interviewee with my own understanding and making sure that my understanding is close to their meaning.

4 FINDINGS

In this chapter the finding results of the study will be presented and explained extensively. The first section is a mapping of the findings as a summary to visualize the emerged themes while following sections include conceptual aspect of the study and the related themes discovered through the analysis of the collected data will show how Finnish LIS experts perceive digital literacy and fact-checking skills and public librarians' roles as digital literacy and fact-checking promoters.

4.1 PRESENTING AND MAPPING OF THE FINDINGS

After the final analysis on the generated codes, six themes were shaped:

Definition/ concepts/ natures	Knowledge	Skills/ duties/ roles	Target/age groups	Challenges/ advantages	Education/ training

The findings are scattered among the mentioned themes since there many similar codes under the same topic and theme. But this type generating themes, helped me to see which aspects of the collected data are related to each other (like following red threads among the codes). Hence, the next parts are the explanation on how the finding have been interpreted. These themes will be used repeatedly under each concept/topic. Also, the interviewed experts are indicated as P1 (participant 1, and so on). s

4.2 THE MATTER OF LITERACIES

Digital literacy as information literacy: concept confusions in LIS

In the collected data of the study, P2, P5, P7, and P8 interviewees expressed their confusion on the concept of digital literacy where they showed their confusion by uttering their uncertainty

in their answers and trying to show their perception of digital literacy through other similar concepts such as information literacy, media literacy, and media and information literacy. P8 stated his confusion as:

> *"That is something that probably we don't have any clear understanding or clear definition, what we use in our department, when we are talking about this with my colleague."*

P2, P7, and P8 underlined their difficulty in personally defining digital literacy. P2 mentioned her background while commenting on digital literacy as:

> *"This is a little bit difficult question because we speak usually about information literacy, not about digital literacy and in information studies, information literacy is the concept that the mostly used and it's the focus is on information logically, as they are interested in information mostly and information related issues."*

P5 and P9 regarded this confusion in the concepts as one of the general challenges for the LIS field. They commented on this issue as:

> *P5: "One of the challenges is perhaps this confusion. I mean the concept and the confusion with the concepts. Because now I also myself have been using this concept… So, that's already just to kind of to decide on one concept that covers everything. And then you have little bit of this and that and that would be … that is a very big challenge, and I don't know how to really overcome that gap so far."*

> *P9: "And I think one thing that's making the knowledge exchange difficult is that there are so many different kinds of literacy concepts, so some call it 'media literacy', or 'multi literacy' or 'new literacies' or 'data literacy' or 'digital literacy' and there are probably overlapping things."*

Based on the collected data, P4, P7, P8, and P9 perceived digital literacy as a contextual concept where socio-cultural context is a vital element in defining the concept and the context determines how an individual is considered digitally literate in a society or community. For

example, P7 mentioned that in defining digital literacy considering the context is a vital and inseparable aspect.

> *"during all these years, we are still kind of discussing what is digital literacy really, and perhaps one thing is also to remember that information literacy and digital literacy, it's a contextual concept, it's always depending on. It's different for different people, in different situation and in different cultures and in different contexts. So, that's why it is a little tricky to say that OK, this is digital literacy, and you can take it with you to any situation anywhere in the world. And you are fine."*

On the other hand, P1, P2, and P6 considered 'digital literacy' as a skill-based concept where the skills shape the concept's definition. For example, P2 while trying to define a digitally literate individual said:

> *"I think this literacy concepts are quite interesting as you can think of them as skill-based, but you don't need to always do that. But of course, if you think in the manner that they are somehow skill-based, or you can list some skills that are included."*

Digital literacy: contextual and skill-based

While interviewees were trying to define digital literacy, they usually referred to other concepts such as information literacy, media literacy, or media and information literacy. All experts except P3 and P6 defined digital literacy as 'information literacy' where information literacy was regarded as the broader concept covering all format of information, while digital literacy basically concentrates on the digital format. Theses interviewees emphasized that information literacy has been practiced and research in the LIS field for a longer period of time while digital literacy is a newer concept for the field experts.

> *P5: "Well, we of course work mostly with information literacy, which would be kind of a bit broader one. And then there are these related media literacy, digital literacy that we touch upon."*

P7: "I would start defining digital literacy by going back defining information literacy because that is kind of the core concept that we work with in information studies, and digital literacy is an aspect of that."

P9: "For me, like I said that the concept of information literacy is more familiar with me, and I sort of view that as a broader concept. And I'm probably not familiar enough to say what digital literacy [is], how would I define it."

In continue, all experts asserted that an individual is considered digitally literate when s/he possesses both knowledge and technical skills; knowledge of the context in which information is being produced, distributed, and used in, and the technical skills needed for operating and using digital tools. This perception can be seen in P1 and P3's comments:

P1: "So, both technical and conceptual understanding about what is the whole and how it is provided to you and who has created the knowledge, all these aspects are related to digital skills."

P3: "It requires the same literacy in general, but also these digital knowledge and skills in particle"

Also, P4, P5, P7, and P10 emphasized on ethical behaviour in digital environment as an important characteristic of a digitally literate person. For example:

P4: "and then you have to be able to understand the ethics and the net, how to behave there."

Or

P10: "Then of course, when find the information then you also have to evaluate it critically and use it ethically and correctly."

P8 was the only expert stressing on the interactive nature of digital literacy. He expressed his point of view as:

"But I think that digital literacy … goes beyond literacy, because digital sites bring up kind of interactivity, in that under topic that you have to organize the information, … you have [to] interact with the system in order

to control to literacy … so, it's not merely the reading. You also have to understand that whole concept of the digitality, so it's interaction"

Based on the findings, the collective perception of interviewed LIS experts on digital literacy concept can be reflected as:

> "Digital literacy is a contextual and skill-based concept which is a specific aspect of information literacy focusing on digital information, and a digitally literate individual has both knowledge and skills to use digital tools for finding, assessing and using the information in ethical way."

Information disorder and fact-checking as social phenomena

While six out of ten interviewees (P1, P2, P3, P4, P5, and P6) expressed that information disorder concept is a totally new concept to them, they were all familiar with concepts such as mis/dis/mal information. After receiving a brief introduction about information disorder (see chapter 2) to the interviewees from me, all interviewees referred to mis and dis information as narrower concepts of information disorder, could define them, and identify their differences, whereas only P2, P4, P5, P6, and P7 mentioned mal information. Overall, the term 'information disorder' was relatively new to all LIS experts who were interviewed. For example, P3 expressed his unfamiliarity directly by saying:

"That's actually something that I have never heard before, that concepts. This is something I'm not familiar with."

P1 assumed information disorder as a context-based concept and a social phenomenon and P7 pointed out that information disorder is essentially a socio-cultural phenomenon.

P1: "I think you can see that in some sense societies are created from stories and there are different stories for different communities, and some stories are more acceptable for some communities than others, so it's related with this. And why some information is doomed as a misinformation or information disorder in some communities … this is the question that I think is very important. This is the origin."

P7: "It must be put in a form of a sociocultural perspective and discussing that"

In brief, LIS experts associated information disorder with 'the information with harmful aims' (P3, P4, P8), 'disordered information' (P7, P9), 'false information' (P6, P7) while they referred to notions such as 'information overload' (P1, P7), 'information poverty' (P7), and 'flood of information' (P5) in the cause-and-effect stance.

P6: "So, I think information disorder has something to do with these types of false information."

P7: "Yes, you have information overload or the paradox with information overload that you have too much information. But when you have too much information you perhaps turn to strategies like information avoidance, resulting in that … we have information poverty in this same picture."

P5, P7 and P8 regarded the free access and the ease of produce and share of unauthorized information on the social media as one of the causes for information disorder issue.

P7: "It's a result of, of course, social media and so on that information is so easily accessible. It's so easy to produce the information and it's easy to use information as a tool to affect and so on."

Similar to information disorder concept, the first reaction from the experts while asking about fact-checking was confusion and assumptions. P3 and P4 noted that it is difficult for them to define fact-checking and expressed their uncertainty respectively as:

P3: "That's also surprisingly difficult. Well, in fact-checking something … usually it's part of something broader."

P4: "I don't know if there are any real scientific definition to fact-checking"

However, only P1, P5, and P8 expressed their familiarity with fact-checking confidently but emphasized that their understanding is not deep or based on research. P5 mentioned that fact-checking is a less talked topic in LIS field.

"I am familiar with it but it's more a general kind of level … I don't remember seeing it very often. It's not very often mentioned. OK, I think it has become

more common also in LIS literature, especially during the past five years about with all fake news and all these new concepts that it has become even more."

There were different opinions on the fact-checking's relation to digital literacy. P2 considered fact-checking rather more present in everyday life whether it is in digital environment or not.

"I think ... that doesn't relate to the systems, but it relates to information. We can receive facts or info ... we receive information from other people and receive information from radio and TV and newspapers and so on. So, it doesn't relate in that sense to digital literacy. In my mind, it's more general and our everyday life"

While P7 noted that fact-checking is a clearer concept compared to digital literacy since it includes particular skills which can be understood and defined easily and be taught through simple guidelines.

"Well, fact-checking I think it's a kind of quite in a way straightforward skill compared to this whole complex understanding around digital information literacy and information literacy. Fact-checking is [that] you have some quite concrete guidelines."

Unlike P7, P5 and P9 considered fact-checking similar to 'evaluation' skill in information literacy in LIS field where the authority, currency, coverage, objectivity and accuracy of the resource is evaluated before it can be used.

P5: "So, it is checking these different kinds of ... now I don't even remember the list ... accuracy ... authenticity and ... currency that is used ... you have to check different parts. Who is the author? Can this be compared to some other source? And all these kinds of most parts. So, I would say that's about the same. The same lists are more or less used for fact-checking that we have used for evaluation."

P1, P2, P3, P4, P6, and P8 emphasized that fact-checking is a skill that works better while the information consumer is aware and knowledgeable about the context in which the information/fact is being presented in rather than just checking the facts.

P3: "It's usually not so that you get a fact and you check it. It's somewhere embedded in some story or whatever, you need to know which parts of these stories are actually facts. And in order to be able to check them, you have to separate them from the story and then you get the facts right if you can. But that's a process, I suppose."

Interestingly, P1, P4, P5, P6, and P8 considered fact-checking demanding high level of evaluation skills and difficult for normal information users and mentioned that fact-checking is more related to journalism and journalist as experts in fact-checking, while P4 and P6 emphasized the role and responsibility of the social media providers towards fact-checking.

P6: "And then it's very, very difficult to solve the issue only by fact-checking. So, it's rather complicated, but the fact-checking is important, and I appreciate journalists who do that these days. But for ordinary persons, many times it's really difficult."

P4: "Like SIP's theory from 1949, you want to get ... easiest way [to] the information and that's why a single person ... don't use time for the fact-checking, even though in many cases it would have been a very important and wise, but they trust the media and here, media has a big role and response to do the fact-checking."

P1, and P4 believed that if fact-checking, as thorough investigation on the accuracy of the facts, is a time-consuming activity and needs a trigger for being practiced. They assumed fact-checking is more practiced in academic environment where checking the fact is a vital task of doing scientific research.

P4: "But you could say that for a single person, fact-checking is a process which takes time. And normally people don't have effort and time that ... they just want to get the information very fast."

P1: "but it requires sort of a need for that. It doesn't happen if you don't get that hint that this fact needs checking. It's a very personal feeling, but I have mostly studied how researchers use system, so it's very fact based and very academic and their resources are quite trustworthy"

While P2 and P8 supported the idea that fact-checking is an activity that demands motivation as a trigger and pointed out that the motivation might lie in the importance and role of specific information and their accuracy for the consumers in their daily life.

> *P8: "It's depending [on] what you are doing, how big role the information in Internet plays in your life and your work life. If I only take some kind of opening hours or bus timetables ... I'd probably open TV and check the 20:30 news ... But if I had children and I am a parent who is very concerned how my kids are doing and how should they get vaccinated or something, ... so then I probably try to find answers ... and in that face, you really need to understand the sources and ... what is reliable source."*

Moreover, all emphasized on the effectiveness of digital literacy and fact-checking addressing information disorder issues. P1, P4, P5, P6, P9, and P10 believed that teaching and improving digital literacy and fact-checking skills of the citizens will help them facing harmful information such as mis/dis information.

> *P10: "they are the ways to fight against information disorder. They are needed."*

> *P9: "Well, if we would consider digital literacy as to involve these sorts of reflective competencies to understand how our information infrastructures or information environments work, so for example, how we are being influenced in different ways, so I guess that's one way to at least try to mitigate some of the problems that's associated with mis and disinformation for example."*

> *P6: "It's essential because you need to have this type of literacy in order to be able to do fact-checking in in modern information environment. So, it's very important."*

However, P7 assumed that addressing information disorder is mainly the responsibility of policy makers and technology stakeholders.

> *"you can develop kind of fact-checking algorithms. Fighting the information disorder, you need to have many stakeholders and levels in society involved,*

so you have to have the decision makers. You need to have the social media platforms and you need to have the different authorities and policymakers to work together so that we can make sure that we reach out to people with reliable information."

Furthermore, P8 believed that fact-checking is partially effective towards information disorder issue and there is the possibility of bias and abuse from the 'fact-checkers' who do fact-checking as a profession.

"But fact-checking as I mentioned already, it's a tricky business. The purpose is good, but how they are now using it, it can be biased. And there can be a lot of power misconduct."

In summary, LIS experts' described fact-checking as evaluation/investigation skills with knowledge on the context in which information is being presented. The skills were emphasized as everyday life activity but with more tendency towards expertise and high level of evaluation skills which is also part of information literacy in the LIS field.

4.3 SURVIVAL SKILLS AND KNOWLEDGE IN DIGITAL SOCIETIES

P3, P4, P6, P7, and P9 pointed their concern on the fast pace of development in the technology field as a challenge for information consumers nowadays.

P6: "But you know, everything changes so fast. In the year 1994, it was a bit different than today. Or 2007 and today it's 14 years, I joined the Facebook [in] 2007. It was all different. It's only 14 years, for example. Social media ... So, what happens, happens so fast."

They stressed this matter as a big challenge for the individual's survival in digitally saturated societies which requires lifelong learning along with lifelong support in education and individual's willingness and persistence in learning and adapting to new types of technologies.

P4: "Here, I hate the word 'real-world', but I say [in] the 'real world', you have to have certain skills here to survive. You have to know how to do banking and you have to know how to do shopping and ... you do everyday

life stuff in the net and that's why you have to have skills that you can survive in everyday life situations"

Knowledge and understanding of the context

As mentioned previously, LIS experts referred to knowledge as an important characteristic of a digitally literate individual, but different types of knowledge were highlighted through interviewees' statements:

- Knowledge of information systems, their elements, and their functions (including the knowledge such information disorder concept)
- Knowledge of digital environments systems and their functions and effects
- General knowledge on the topic in which information seeking is being done
- Understanding of the context in which the information is being presented in

In this section, the interviewees used different terminologies such as 'knowledge', 'understanding', 'semantic understanding', 'conceptual understanding', 'technical understanding', 'knowing', and 'awareness' alternatively. These terms were finally interpreted into 'knowledge' to help with the analytical theme. For example:

P6: "And in order to be a digitally literate, you should have technical understanding about how things work. Not in detail, but you should be able to understand the processes."

P7: "but it goes back to I think the defining information literacy, but defining digital literacy is then more on the awareness, attitude and ability to use digital tools and digital information with this larger understanding of information literacy, as in the background."

There were two specific notions pointed out by the interviewees as important concepts a digitally literate individual must be aware of. P1, P3, P5, and P9 noted the notion 'algorithms' while 'filter bubbles' was mentioned by P1 and P4. For example:

P1: "So, people need some understanding about the contents, how they're created, where they come from, how they are provided, for example, algorithmic aspects."

P4: "Because the big problem nowadays is that you have this Google bubble and you trust the Wikipedia always and you [aren't] always ... so critical. That's a big problem."

Skills: technical and non-technical

In P1, P4, P5, P6, P7 and P8's believe, information literacy, media literacy, and media and information literacy skills are the core of the digital literacy skills and as broader skill sets that cover digital literacy skills with slight difference in the format of the information and their carriers (mentioned in 4.2). For example, P1 and P8 respectively commented:

P1: "It's basically information literacy. It's about abilities and skills to use and evaluate and find suitable and trustful information, but in case of digital, so it's just how to manage with all the digital information flows and your information needs related to those contents."

P8: "So, [it is] awareness of the content and the aims and goals of the people who are publishing those contents. I think that is some skills that you need/have to have when we are talking about information literacies and media literacies."

The skills highlighted by the interviewed LIS experts as digital literacy and the number of interviewees mentioning them is summarized in Table 3.

Digital literacy skills	Number of interviewees
Access [as prerequisite condition]	3
Willingness to learn and adapt	2
Technical and operational skills	10
Discerning information needs	2
Critical thinking	4
Navigation	2
Search	5
Evaluation	9
Content creation	6

Table 3. Summary of digital literacy skills mentioned by LIS experts

P5, P7, and P9 believed that the ability to access to digital tools, information and education is the prerequisites for a digitally literate individual. For example, P9 mentioned:

> *"But yes, probably thinking about the whole Finnish population for example, it's very difficult nowadays to do things without having the basic understanding of how you can access your bank accounts or pay bills or access your health care records or things like that in digital form. So, the basic level is probably that."*

'Willingness to learn' to use new technologies was marked by P2 and P7 as personal attitude of a digitally literate individual.

> *P7: "And a digitally literate person is aware [and] has the attitude to learn new digital services and tools"*

Moreover, 'technical and operational skills', mentioned by all interviewees, was the most noted skill by LIS experts for identifying an individual as digitally literate. Here are some example opinions:

> *P10: "Well, I think it's first of all the ability to use digital technologies. I mean like technical skills, but also the ability to find and evaluate and use the information that one finds in a digital format."*

> *P9: "but the impression that I get usually when this concept is used, that it's mostly about the competencies that are needed to use different kind of digital tools."*

In addition, P5 and P7 also considered 'discerning the needs' in information literacy skills as one of the digital literacy skills.

> *P7: "So, a person who is digitally literate is aware of their information needs for a certain purpose to make decisions and then, they are aware of how to look for that information, from which sources, I mean in a digital context now."*

The ‘evaluation skill’ with nine interviewees (all except P3) emphasizing on it, and the ability of ‘critical thinking’ for a digitally literate individual noted by P4, P6, P7, and P10 were perceived and mentioned as close and alternative skills.

> *P4: “Digital literacy for me … well, I would say that a person has to have good knowledge about the information retrieval and also, he or she has to know how to be critical to the material.”*

> *P9: “Where I stand the information literacy perspective, to me at least, is more about the different ways to understand and evaluate information coming within many forms that can be digital”*

Also, the ability to ‘navigate’ through different digital platforms (P4 and P5) and ‘searching’ and ‘retrieving’ needed information (P1, P3, P5, P7, P10) were mentioned quite close and in relation to each other.

> *P5: “You need to know how to open different apps and programs and perhaps logging somewhere if you need, you need to know which databases to use if you're going to use databases to conduct some searches there, … how to type, what to type, how to formulate search strings … depending on where you are looking for this information”*

> *P7: “where they can find it and how they can use them for retrieving that information and they can navigate the digital information landscape”*

And finally, P1, P3, P5, P7, and P10 considered the ‘use of information’ (again an information literacy skills) as ‘content creation’ in digital literacy skills, while P4 was the only expert who directly mentioned ‘creating content’ on digital platforms as a digital literacy skill. Moreover, the notion of ‘ethical usage’ of the information as a characteristic of a digitally literate individual (mentioned previously in 4-2) was pointed out by P4, P5, P7 and P10 in relation to content creation skill.

> *P4: “And then you have to be able to understand the ethics and the net, how to behave there. You have to be able to produce material to the net…”*

> *P5: “it's mainly knowing that where to look for the information you need in digital environments … and to use it in the ways that you need to use it for*

benefit of something, and but also there are some broader things that are not covered by information literacy … But I think that can also be covered by use in information literacy concept that you use it for something."

Fact-checking was perceived as the evaluation skill in digital literacy and information literacy and interviewees mentioned that evaluation of the information usually involves critical evaluation of:

a) content accuracy and reliability,
b) author's credibility,
c) publisher's trustworthiness,
d) understanding the context in which the information is being presented in,
e) and towards which audience the published information is targeted to.

These evaluation steps have been considered as a checklist while conducting fact-checking by all LIS experts interviewed. For example, P9 mentioned her opinion from her own field of work and experience:

"so probably in our field we would usually talk about identifying credible information sources and thinking about what kind of sources can be trusted, what kind of biases can there be? How was this information created? and things like that."

In addition, P1 mentioned cross-checking as an academic way of conducting fact-checking.

"Typically, from my studies, what I have been doing, people typically do fact-checking by cross checking their findings."

On the other hand, P3 associates fact-checking with investigating rather than simply evaluation:

"Well, in fact-checking something … usually it's part of something broader. Somebody tells you something which constitutes of facts. Then you go deeper to the fact or check some of the facts which are embedded in that storyline or whatever."

4.4 PUBLIC LIBRARIES ON EDGE

While interviewing the LIS experts, there was inconsistency in mentioning the 'public libraries' and 'public librarians' alternatively. Hence, after analysing the collected data, I decided to separate these two concepts since one is an organizational element and the other is individual human beings. Both have differences and similarities in their status and roles in the society which might overlap, but here, when considering the aim of the study which includes training and educating public librarians as public library staff, the topics will be perceived from different aspects. However, since all collected data shape the final analysed findings, 'public libraries' codes have been preserved and analysed in coordination with all other data.

Public libraries in Finland: duties, challenges, and advantages

P1, P7 and P9 highlighted the strong status of public libraries in Finland in support of democracy and enhancing active citizenship.

> *P1: "And this is also related to this democracy discussion that there are fears that are Finnish democracy is somehow losing its power because people are not participating enough and our libraries could have role in that."*

> *P7: "Because you help people to find information or knowledge. You support them in their lifelong learning. You support them in being active citizens. You support them in making decisions."*

All interviewees believed that public libraries have important and significant roles towards information disorder and the chaotic situation of information on digital environment. They regarded providing free and inclusive '**access**' (to tools and information) and '**education**' (technical/digital and digital literacy/ fact-checking skills) for society members were two main roles for public libraires promoting digital literacy and fact-checking.

One of the primary roles highlighted for public libraries by P1, P2, P4, P5, and P9 was providing access to information, as well as digital tools for all society members. This access should be free and inclusive to all types of information resources for all members of the society.

P9: "But [in] my understanding, the [Finnish] law [for] public libraries gives some basic requirements for libraries. That sort of touch on digital literacy as well, for example, that people should have equal opportunities to get access to information. Well, that's going to be like understood as for example, there should be different kinds of material available that includes both digital and nondigital forms and guiding people towards having access to use the digital that's available."

Also, P1, P3, P4, P5, P6, P7, and P9 stressed public libraries' role in providing education to society members and supporting them in their lifelong learning. In their opinion, the education should include digital literacy and fact-checking while complemented by supplying access and teaching for digital tools as a prerequisite of this duty. They referred to the constant collaboration of Finnish public libraires with schools as one of the ways for offering education services and collaborating in formal education.

P6: "At least in Finland, public libraries are cooperating with schools. And their role in this sense is important."

P4: "I think that it's a very big role because if [you] think about school children for example, library has a big role to teach them, for example, digital literacy and also, fact-checking."

While some of the interviewees pointed out that the collaboration with schools is more or less under the 'media education' courses, however, they believed this type of education is exclusively limited to students.

P5: "I think they have a quite important role and ... they do have. I mean they are at least to some extent, for instance involved. But as I said, it's more not necessarily the digital literacy. Again, it's more the media literacy ... the media education that they are involved in."

On the other hand, providing education courses was regarded as another way for reaching and educating those society members who are out formal educational systems.

P9: "So, libraries are a good place to reach people who are not anymore in the educational system or don't necessarily are in the types of work that's

they would be using these kinds of tools. So specifically, I would think that beyond like outside of the educational system, libraries are good way to reach all kinds of people."

The most mentioned vulnerable age groups in need of digital literacy education were elderlies who lack the formal media education. This age group was pointed out by P1, P4, P5, P7, and P10.

P10: "Maybe older people, when they were at school, they hadn't and the chance to get digitally literature there because it was before this time when we [didn't] have internet."

While adults were the challenging age groups as the 'least attracted to public libraries' which were also highlighted by P1, P3, P4, P5, and P6 as well.

P1: "and then we have this most problematic with which middle aged people that don't use libraries."

P1, P2, P8, and P9 accentuated the trusted and strong position of public libraries in Finnish society, as P1 underlined the network system of Finnish public libraries and P9 highlighted the skilled staff of Finnish public libraries as **advantages** enhancing their position in the society.

P8: "but I think that Finnish society sees the high value of the public libraries because their education and the skill of reading are so highly appreciated in Finnish society. So, I can't see the future where there libraries are not so well appreciated anymore."

P1: "but in Finland libraries are sort of network. They do the things quite same way. Because it's a sort of a unified model what is a library. And they provide quite the same services. So, this might be a good thing to start as a project … some sort of development project."

However, many **challenges** were pinpointed by LIS experts for public libraries in Finland which comprise of:

a) budget and resources allocation issues (P1, P5, P8),

P8: ". But what comes to the library sector, I think that is so much dependent on how the government is in the future, how they are spending money to the library sector. Because it's totally depending [on] our state fair, same thing like in the university. If there are budget cuts in future that will affect the library sector of course."

b) organizational structure and administrative priorities (P1, P5),

P1: "So, I think ... it's on several levels and it's partly because the directors are more administrative directors, not that kind of change leaders. But they are sort of ... there are individuals that are doing this"

c) lack of staff (P5, P8, P9),

P5: "but apparently, it's still quite few in the library who have these tasks, and that has also been mentioned to be a problem, especially in smaller libraries ... depending on how large the staff is, but in most libraries, it could be just a few one or two, even who work there, and they have to take care of everything. And then they usually don't even have the time to do these kinds of extras."

d) digitalization and copyright issues (P1),

P1: "It used to be quite a big issue, I think 20 years ago, but I think nowadays it's just in libraries. It's quite a lot surviving because of their resources are so low and it's in the flux. The whole library concept is in pain with all this digitalization, and they still hold the printed collections and have problems with licensing issues with these materials, particularly in public libraries."

e) and trust issue while collaborating with other organization (P7).

P7: "The challenges, of course, ... there're different roles and how to share the responsibility and when you collaborate to find a good way to share that responsibility and trust ... that ok, teachers can trust that the librarians can take care of some part of that and vice versa."

Public librarians: educators and mediators

With the emphasis of LIS experts on the important status of the public libraries supporting digital literacy and fact-checking education and services for the Finnish society members, the stance of public librarians and the expectations from them come into consideration.

Based on the collected data, total of four duties/roles were pointed out for public librarians associated with promoting digital literacy and fact-checking (see Table 4):

Roles	**Duties**
Education (10 interviewees)	• Collaboration with schools and partaking in formal education • Providing educational courses for library users out of educational system
Customer service (7 interviewees)	• Providing guidance on using digital tool • Providing guidance and consultation on accessing trustworthy resources and information
Content creation (3 interviewees)	• Creating guidelines on digital literacy skills and fact-checking steps and how to recognize trustworthy resources • Creating lists of reliable databases on the digital platforms
Acquisition (3 interviewees)	• Providing access on resources with digital literacy and fact-checking skills teaching • Procuring and providing access to different types of trustworthy resources and information in all formats

Table 4. Public librarians' duties/roles perceived by LIS experts

Based on the collected data, 'education' was the most repeated role for the public librarians through all interviews as an important direct method for promoting digital literacy and fact-checking. Educator role includes two duty aspects which are: a) as a collaborator educator with school teachers and partaking in formal education, and b) providing educational courses for library users who are out of educational system, specifically elder age groups which are in dire need of digital literacy and fact-checking skills as non-digitally educated generations. Education role has been mentioned before for libraries as well as the challenging age groups. For example, P4's opinion was direct, and he believed:

> *P10: "I think that they have a big role in addition to schools and teachers. I think that Librarians have a big role. And I think that librarians' role is kind of connected to schools also like … that the libraries cooperate with schools,*

and also with universities and the pupils and students and they visit libraries and librarians teach them or just help them informally, yeah."

P5: "And more seldom, perhaps organize some kind of event or course, especially aimed at adults, and then for the smaller children. It's then in some kind of collaboration with the schools that either that schools or the classes come to the library, or that the librarians go to the schools to talk about something, usually not very common, apparently either."

On the other hand, the other frequently mentioned role was 'customer service' (P1, P2, P4, P5, P7, P8, P10) where public librarians guide and consult the library users in addressing their information needs. While interviewees believed that this role is not promoting digital literacy and fact-checking directly, however the librarian's effort in guiding the customer and showing the proper steps was considered indirect promotion on both using digital tools, and safe information seeking behaviour through digital platforms. Here P2 and P5's comments:

P2: "for example, a question or information need, where the answer is in some book, not in digital systems, so many customers might come to the library and ask that I need some trustworthy source of information related to, for example, some disease and then librarian guides him or her to the section where there are these books related to this disease and say that these should be quite good and trustworthy source of the information that you might be needing."

P5: "then they might have some kind of guides to give that here, even printed material that here is the guide, here is how you use this and this machine, having printers, for instance, for people to use and sometimes even some rooms for showing some movies or something that could be kind of a lecture type or even lecturing themselves."

Furthermore, 'content creation' role of public librarians was underlined by P4, P5, and P8 and it was considered as either a) public librarians create short and comprehensive guidelines on digital literacy and fact-checking skills and how to practice them, or b) create lists of reliable information databases that are needed in citizens' daily life such as health information or news platforms.

P4: "Of course, producing materials. It's important that because librarian should be experts in this field, and I think that it's important that they produce kind of materials which is understandable, brief packages to customers who can study this kind of things by themselves. And when the librarians produced these materials, we know that … they're good quality. And that's why it's important."

Though through the 'acquisition' (P2, P6, P7) role, public librarians either provide society members with educational resources on digital literacy and fact-checking or collect and curate different types of credible information resources in all different formats including digital.

P7: "In a library there are of course so many different tasks and roles and there are a lot of tasks that you don't kind of see outside. It's about knowledge organization and collection building and so on. But when in all the roles a librarian has together with the library users, I think there's a dimension of digital literacy or media and information literacy somehow. Because you help people to find information or knowledge."

Therefore, considering the above-mentioned duties/roles for public librarians, there are associated **knowledge** and **skills** which in LIS experts' perspective are essential for public librarians to fulfil them. The knowledge and skills mentioned by interviewees for public librarians while promoting digital literacy and fact-checking which are summarized in Table 5.

Knowledge	
General knowledge	4 interviewees
Information systems knowledge	2 interviewees
Digital systems and environment knowledge	1 interviewee
Skills	
Pedagogical skills	8 interviewees
Communicational skills	5 interviewees
Digital literacy skills	5 interviewees
Information literacy skills	3 interviewees
Discerning customers' information needs	2 interviewees
Technical skills	1 interviewee
Navigational and search skills	1 interviewee

Table 5. Essential knowledge and skills for public librarians in LIS experts' perspective

P1, P4, P6, and P7 in their answers emphasized on the general knowledge as an essential aspect for the public librarians which provides them with stronger basic for evaluating different information in different fields.

> *P6: "So it's not enough that you know about … technical details, you have to have good general knowledge as well."*
>
> *P1: "You need knowledge … on the contents"*

Besides, possessing 'information systems knowledge' (P4 and P9) and 'digital system and environment knowledge' (P1) were regarded crucial for public librarians.

> *P9: "But then, probably overall understanding of technology, the role of technology is in society."*
>
> *P1: "So, this kind of functioning … how the systems work. You need knowledge on the level on the information environment, on the contents, on the carriers, and their systems."*

While 'education' was revealed as a main role for public librarians by LIS experts, as a result all interviewees (except P8 and P10) emphasized on the necessity of 'pedagogical skills' for public librarians. For example, P9 directly mentioned:

> *"Well, probably if you think about teaching, then of course, the pedagogical skills are important."*

Moreover, 'communicational skills' was correlated with customer service duty by P1, P2, P3, P4, and P6. The ability to communicate and guide the customer was also deemed as a personal aptitude and trait for public librarians by P2.

> *P4: "They also have to know how to guide and teach people. So how to be in contact with the customers."*
>
> *P2: "That you know … how to guide and how to access and help with this kind of things … It can relate to personality, so some people are … maybe more likely to end up into this kind of tasks than others."*

On the other hand, P2, P6, P7, P8, P9 believed possessing digital literacy skills is crucial for public librarians as a subject they are promoting, whereas P2, P4, and P7 pointed out information literacy skills which public librarians are already acquiring in higher education trainings.

> *P4: "Of course, very important part of the work is information retrieval skills. Good information literacy in all those skills they have to teach."*

> *P6: "And then of course they should master this digital environment and different publishing platforms. So, it's in fact very challenging."*

Out of all digital literacy and information literacy skills, 'discerning customers' information needs' (P5, P7), 'navigational and search skills' (P4), and 'technical skills' (P3) were also pointed out with more emphasis on them by interviewees.

> *P4: "Information retrieval is one of the main things librarian has to know. Everything you teach, you have to know. And then in that way you could answer that question that what are the needs of the customers. And what kind of information customers need, librarians have to know that."*

Finnish public librarians: ready but not ready

In the answer to question about the readiness of Finnish librarians in promoting digital literacy and fact-checking to answer the need of the society members, P2, P3, P6, P9, and P10 expressed their uncertainty in answering the question due to different reasons such as lack of information or lack of any evaluation systems for librarians' skills.

> *P9: "Well, I don't really have enough experience [to] ... respond to this question."*

> *P3: "Well, that's a good point. How do you evaluate it? No matter how ready they are for these roles. That is actually good question, and I don't have any answer for that."*

However, P1, P4, P7, P9 (later P2 and P10) stated that Finnish librarians are ready and capable in fulfilling digital literacy and fact-checking promoting roles. P1 directly stated her opinion as:

> *"Well, yeah, I think libraries are quite ready, but it's about how the things are organized in the libraries."*

On the other hand, P5, P8, and P9 pointed out the generation gap in Finnish librarians' education and skills and stressed younger generations are more ready for acquiring the promoting roles based on their education and training. In their opinion, this gap in skills is both a challenge and an advantage for Finnish public libraries. It was considered a challenge in the sense where there's a disparity in public librarians' capabilities taking the role of digital literacy and fact-checking promotors whereas the more skilled younger generation are the moving engine enhancing the movements towards digital literacy and fact-checking promotions in public libraries.

> *P8: "So, there are new generations of Finnish librarians who are younger and they are utilizing any kind of elements of digital world in library work. But of course, there are traditional staff and professionals who probably don't see that digital world is so important and probably think that digital world is only some kind of fashion which goes away."*

> *P9: "So, I'm thinking that some libraries probably are very ready for these roles, but there also some librarians that this is very new thing that they have not been used to and they don't have any experience in, so probably there will be a big disparity in this."*

Also, P1, P2, and P6 regarded the high level of education of Finnish public librarians as an advantage for public libraries. P6 directly commented:

> *"I think librarians are pretty well educated in Finland."*

On the other hand, some challenges were pointed out by LIS experts for public librarians in Finland including:

a) Lack of some crucial skills in public librarians: pedagogical, navigational, and information retrieval skills, limited digital literacy and fact-checking skills (P4, P6, P10),
b) Lack of pedagogical skills in public librarians (P4, P5, P9),
c) Public librarians' position issues: low salary, less respected position due to less awareness of citizen on their education levels and skills, less strong status in formal education (P2, P5, P9),
d) Lack of motivation and low positions of digital literacy and fact-checking in the public librarians' duty priorities (P1, P5),
e) Librarianship as a rather female dominated profession (P2),
f) The fast pace of development in technologies and the struggle in keeping librarians' skills updated (P1).

4.5 LIS: A CROSS-CUTTING FIELD

In order to ensure the anonymity of the interviewees, I do not mention them in this section.

LIS experts representing three universities of Tampere, Oulu and Åbo Akademi stated the aim of their higher education programmes in Information Studies is to train the students as 'information experts' with versatile capabilities rather than for a specific position. For example, one expert from Tampere University pointed out:

> *"we see in our department or our teaching direction that our students are capable of doing library work, but also doing work from another field of information, for instance, the private sector or is the trajectories."*

Based on Table 1, none of the universities with LIS programmes in Finland have provided courses with specific titles of 'digital literacy' or 'fact-checking'. However, based on the collected data, all the interviewed LIS experts representing four universities believed that digital literacy and fact-checking skills training are embedded and dispersed in their programmes under different courses. Especially, experts from Tampere, Oulu and Åbo Akademi universities stressed that the core of their programmes are based on information

literacy which includes digital literacy and fact-checking as well. For example, one expert from Oulu University mentioned:

> *"But with us, we incorporate information literacy to our education, and it's integrated in many different courses, and we have all sorts of separate courses just for information literacy. So probably some of the themes are addressed there."*

And the expert from Åbo Akademi mentioned:

> *"But we have planned it in the way that information literacy or digital literacy also is kind of a crosscutting theme, so it is a part of … we have a bachelor's program in LIS and then we have a master's program in governance of digitalization. So, we discuss media and information literacy in many different courses to give kind of different perspectives."*

All LIS experts also stressed the presence of 'information seeking and retrieval' training in their courses as a crucial digital literacy and fact-checking skills. While the only stress on content creation was from SEAMK's LIS expert. He mentioned:

> *"now we have for example information retrieval and information seeking. I teach all of those three courses. It's altogether 15 credits. For example, we have courses in social media producing content. We have media literacy, and so on. So, there are plenty of courses about digital media, social media, information retrieval, information seeking and producing content to the net, and so on."*

One expert from Åbo Akademi highlighted the theoretical training on digital literacy and fact-checking while one expert from Tampere university believed that the practical training on these skills is obtained on internships provided for LIS students. On the other hand, one expert from Oulu university believed that the training approaches of Oulu and Tampere universities are different and unlike Tampere university's LIS trainings moving towards more divergent and interdisciplinary fields like media literacy, Oulu university's LIS programmes are still shaped on basic LIS studies. This expert mentioned:

> *"So, what we are teaching [in] information studies, basic studies, we are still teaching our own basic studies, for example when we compare to University of Tampere, they don't have any more their own basic studies but we do have our own."*

P2, P7, P8 and P9 believed the divergence happening in the LIS field is more challenging since the field will eventually lose its foothold as an independent field and the basics will be more prone to constant change and consequently too diverse to teach. For example, P7 noted:

> *"but then of course, looking at the library and information science profession, there are its own challenge that the profession itself is very diverse and library and information services … So, when you teach the basic skills that you need in your future career, you have to think in terms of if you work in a public library, if you work in the university library, if you work in a special library, if you work in the business context, if you work in public administration and develop digital services, if you work here, there, and so on. So, that is a current and a future challenge that you have to think about."*

And P9 added:

> *"in Finland, is that departments have become smaller and it's sort of being merged … So that's one sort of concern that I have … there seems to be a trend towards having multi professional groups working in libraries rather than having only LIS professionals which I think can be a very good thing that there's a different kinds of competency areas that support each other. But I'm a bit worried that the LIS professionals, what will happen to them and … And one thing is probably this adjustment to that … looking at it from the educational perspective, we don't really know what are the key things that will be there in working life for in 5 or 10 years"*

On the other hand, P3 regarded this divergence as an opportunity for the LIS field. He commented:

> *"so we get diversity in the field, and I think the tendencies is going to that direction. In the university education that they are encouraged to select subjects from different disciplines, at least in Tampere University, but also*

elsewhere, I suppose. It's not only LIS, it's LIS which is applied to somewhere, and that could be considered as an opportunity."

While P7 and P10 assumed that the status of LIS field is improving due to constant support of academic research, P8 and P9 considered that this improvement requires a boost in the LIS field's researchers' status and support. P2 supported both ideas and pointed out that while the academic society develops LIS field, however the research focus needs to be determined. She commented:

"what kind of research we do, it focuses a lot or reflects a lot to what we are teaching and at the moment, for example … we are having … project relates to AI literacy … so, I think these research teams are always present when we teach also. So, if we are in our research focusing on topics that relate, for example, disinformation, so in that sense it's present in what we are teaching."

Other challenges mentioned by the interviewees for the LIS field included a) fast pace of development in technology and its constant change (P1, P4), b) lack of sufficient IT knowledge and experts in the field (P2), and c) loss of applied science universities supporting the librarians' practical training (P2).

5 DISCUSSION

In this chapter the key findings of the study in relation to the research question and the conceptual framework will be discussed. It will discuss the answer to the research question as well as the implications of those answers.

The research questions are:

What kinds of perception Finnish Library and Information Science (LIS) experts have of public librarians as promoters of digital literacy and fact-checking?

- What skills are perceived as necessary for digital literacy and fact-checking in the LIS field?
- What are the roles and duties regrading public librarians as digital literacy and fact-checking promoters?
- What are the teachings and trainings provided for the Finnish librarians by LIS field academics to support their roles and duties?

5.1 PERCEPTION ON DIGITAL LITERACY AND FACT-CHECKING SKILLS

LIS experts' opinion on digital literacy skills was in coherence with the opinion of Hobbs (2017), Baron (2019), and Buckingham (2015) highlighting the importance of both knowledge and skill of digital tools and environment for information consumers. Although skills such as 'content creation' from Hobbs (2017) and Baron's (2019) skill sets was less pointed out in LIS experts' statements, 'discerning information needs' skill from information literacy concepts in LIS experts' was regarded crucial for a digitally literate individual.

In the LIS experts' perception of fact-checking is more or less the 'evaluation' skill of digital literacy while it also demands the knowledge to support an objective judgement on the information. However, this view only covers the Mantzarlis's (2018) first two of three suggested fact-checking steps indicating the evaluation of the facts and the context, and the

first three steps of IFLA's (2017) six-step evaluation of the credibility of the source of information, the context and the credibility of the author were mentioned by the interviewees. This perception can be regarded as half of the suggested approached for a complete fact-checking execution. LIS experts' viewpoint on fact-checking steps lacked the correction of false facts and indirectly pointed out the role of librarians as guidance for information seekers mentioned by Mantzarlis (2018).

On the other hand, the direct approach using guidelines in practicing of fact-checking by IFLA (2017) was supported by LIS experts. While unlike Mantzarlis (2018) and IFLA (2017), interviewees pointed out the necessity and criticalness of motivation and high level of evaluation skills for everyday fact-checking habits in information consumers.

Also, none of the interviewed experts mentioned IFLA while UNESCO was the only international organization mentioned for providing terminology and framework for new concepts such as digital literacy during the interviews.

5.2 FINNISH LIBRARIANS' CRUCIAL SKILLS AS DIGITAL LITERACY AND FACT-CHECKING PROMOTERS

The interviewed LIS experts' opinion on the necessity of public libraries' intervention in combating information disorder was in line with Russo et al. (2019) and Walsh (2010), while it supported Fontanin's (2019) view on the deep implantation of information literacy in the LIS field and librarianship profession with stress on high quality skills training provided for librarians on information retrieval and evaluation.

With the mention of Finnish Public Libraries Act (2016) and the stress on the public libraries' required engagement in media education in Finland. Also, findings of the study revealed that LIS experts agree with Lahtinen (2018), Heinonen (2019), Karttila-Matero (2011), Ojaranta (2019), and Sallmén (2016) that public libraries unlike schools exclusively teaching the students, should fill the gap supporting all citizens' media education inclusively. Consequently, Sallmén (2016) and Helminen's (2016) view on multi-skilled librarians with pedagogical skills was verified by LIS experts.

Therefore, to determine the necessary skills needed for Finnish public librarians promoting digital literacy and fact-checking, first their roles and duties were identified. Out of six roles of public librarians mentioned by Lor (2018) for combating information disorder, only collection of trustworthy information resources (acquisition), educating the information consumers (education), and providing access to information for all citizens (acquisition) were pointed out by while the roles of correction of the false information and preserving important documents was not mentioned by LIS experts for public librarians. Two roles of 'content creation' and 'customer service' were only added by LIS experts.

Finally, four main skills including 'pedagogical skills', 'communicational skills', digital literacy skills, and information literacy skills were concluded as supporting skills crucial for fulfilling digital literacy and fact-checking promoting roles of the public librarians.

5.3 TEACHINGS AND TRAINING FOR FINNISH PUBLIC LIBRARIANS

The findings of the study showed that LIS experts agree with Cooper (2021) in the necessity and challenge of the LIS fields' move towards multi-disciplinary approaches and divergence. Hence, LIS experts' agreed with Strömberg (2020) and approved LIS education in Finland is being implemented with the aim of training 'information experts' rather than preparing the students for specific positions.

In accordance with Table 1 and my findings, LIS experts mentioned that digital literacy and fact-checking concepts are embedded in their current programmes, however they are not presented under the titles 'digital literacy' and 'fact-checking'; rather they are parts of information and media literacy education implemented in different courses.

On the other hands, based on the finding of the study, LIS experts believed the missing compulsory pedagogical teaching and IT knowledge and expertise from information studies' programmes are big losses for training of the future public librarians.

5.4 IMPLEMENTATION OF THE FINDINGS

Based on the study, concepts of digital literacy and fact-checking are not known in the LIS field and the overlap in concepts makes the practice of them confusing. Although information literacy is deeply rooted in the LIS field, however the skills are general, and universities' programmes are forced into constant updates and changes.

Also, since using digital tools has turned into a daily activity associated with information consuming behaviour, establishing strong IT knowledge and trainings in LIS field is crucial for the continuation of the field and enhancement of the public librarians' foothold as trusted and skilled mediators.

The academic LIS society supports the education and training of the public librarians and their clear approach towards digital literacy and fact-checking helps them with adapting and updating their understanding and skill levels on these subjects. The research results are reflected in the services provided for all citizens and overall, in the whole society. Therefore, academic LIS is the backbone of public librarians as digital literacy and fact-checking promoters. Figure 3 indicates the results of the findings and their relation to the conceptual framework of the study.

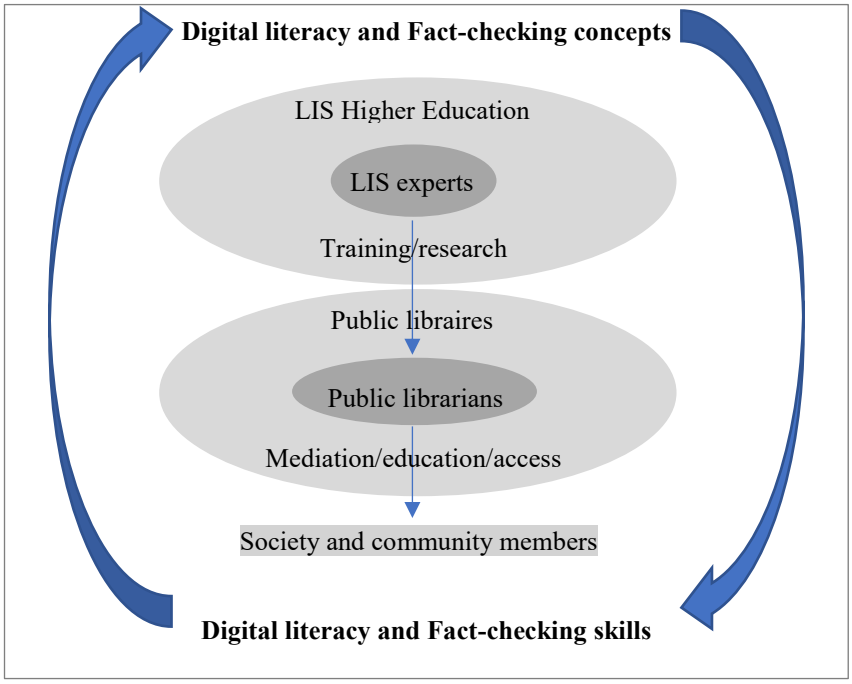

Figure 3. Study conceptual framework modified with findings of the study

6 CONCLUSION

This study started with the aim of discovering LIS experts' perception on digital literacy and fact-checking skills and how public librarians can promote these skills as part of their duties in the public libraries.

First, the digital literacy and fact-checking as main concepts of the study were introduced with literature supporting their necessities as daily skills for active citizens of modern and digitalized societies. The importance of public libraries' status as one of the free and inclusive gateways to access to information was mentioned while public librarians' roles as mediators for digital literacy and fact-checking education for society members were emphasized through defining these roles. Finally, current LIS higher education programmes in four Finnish universities of Tampere, Oulu, Åbo Akademi and SEAMK and how digital literacy and fact-checking concepts are reflected in them was described thoroughly following literature supporting the role of public librarians in media and information literacy education. This study was a try to answer the question: What kinds of perception Finnish Library and Information Science (LIS) experts have of public librarians as promoters of digital literacy and fact-checking?

Qualitative research method was selected and utilized in order to answer the main question of the study and the data was collected through semi structured interview. The interviews were transcribed, and the collected data were coded and finally, analysed using thematic analysis.

The findings of the study revealed that LIS experts believe digital literacy and fact-checking as information seeking behaviour concepts are different aspects of information literacy concept which is the most dominant concept in basic LIS studies. They confirmed the important role of public librarians in providing digital literacy and fact-checking education, mediation, and services for society members and believed that pedagogical, communicational, digital literacy, and information literacy skills are crucial for fulfilling their roles.

Finally, findings showed that LIS programmes as basic public librarians higher education trainings have embedded digital literacy and fact-checking education while the concepts are not clearly formed while the most needed pedagogical skills are missing from the information studies compulsory courses. Based on the findings, there are recommendations from this study:

1. Information literacy concept in the LIS field is a rooted concept, however, since new concepts are emerging rapidly with the advent of new technologies, and although there are similarities and overlapping across them, awareness of their differences and functions helps with the research in the field. Information literacy concept can be regarded as the core concept while new skills can be identified and introduced in the LIS field.
2. More practical training on fact-checking and digital literacy skills in addition to education on information and digital systems in LIS higher education helps with enhancement of public librarians' abilities and provide them with general infrastructural knowledge and awareness towards new digital environments.
3. Unlike the new stronger and digitally literate generation of public librarians, public librarians are in struggle with survival in the digitalized library systems. The network system of public libraries in Finland has turned public librarians into more passive library staff receiving content and instructions from the administrative and directorial levels. This passive position creates a rather unknown image of public librarians for society members. There should be more contribution in public debate and formal education by public librarians.

This study cannot be considered a completed work, however findings revealed important descriptions on LIS experts' approach and understanding of important and new concepts of digital literacy and fact-checking. Hence, future studies on the approach of the higher education and the need of the society members can help to reduce the gap between theory and practice. Also, more research on different positions LIS students filling in the society can help with more clear images of educational need of these students.

REFERENCES

Afzal, W. (2006). Argument for the increased use of qualitative research in LIS. *Emporia State Research Studies*, *43*(1), 22–25.

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives*, *31*(2), 211–236.

Associations, I. F. of L., & Institutions, (IFLA). (2017). *How To Spot Fake News – IFLA in the post-truth society* (Vol. 2021, Issue Aug 29,). https://www.ifla.org/news/how-to-spot-fake-news-ifla-in-the-post-truth-society/

Baron, R. J. (2019). Digital Literacy. In R. Hobbs & P. Mihailidis (Eds.), *The International Encyclopedia of Media Literacy* (1st ed., pp. 1–6). Wiley. https://doi.org/10.1002/9781118978238.ieml0053

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Buckingham, D. (2007). Digital Media Literacies: Rethinking media education in the age of the Internet. *Research in Comparative and International Education*, *2*(1), 43–55.

Buckingham, D. (2015). Defining digital literacy-What do young people need to know about digital media? *Nordic Journal of Digital Literacy*, *10*(Jubileumsnummer), 21–35.

Buckingham, D. (2019). Teaching media in a 'post-truth'age: Fake news, media bias and the challenge for media/digital literacy education/La enseñanza mediática en la era de la posverdad: Fake news, sesgo mediático y el reto para la educación en materia de alfabetización mediática y digital. *Cultura y Educación*, *31*(2), 213–231.

Buschman, J. (2017). November 8, 2016: Core values, bad faith, and democracy. *The Library Quarterly*, *87*(3), 277–286.

Buschman, J. (2019). Good news, bad news, and fake news: Going beyond political literacy to democracy and libraries. *Journal of Documentation*, *75*(1), 213–228. https://doi.org/10.1108/JD-05-2018-0074

Chee, M. (2020). Connecting Theory and Practice: Implications of Coherence Theory in the Fight Against Fake News. *Proceedings of the Annual Conference of CAIS / Actes Du Congrès Annuel de l'ACSI*. https://doi.org/10.29173/cais1148

Chisita, C. T. (2020). Libraries in the midst of the Coronavirus (COVID-19): Researchers experiences in dealing with the vexatious infodemic. *Library Hi Tech News*.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education: 6. Ed*. Routledge. https://doi.org/10.4324/9780203029053

Cooke, N. A. (2018). *Fake news and alternative facts: Information literacy in a post-truth*. ALA Editions.

Cooper, A. (2021). *Information Disorder: Are librarians able to counter the spread and effects of fake news, misinformation and disinformation in a post truth world* [Humanities Commons]. https://doi.org/10.17613/JTMQ-4Z10

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches. 4. Ed., internat. Student ed*. Sage.

Derakhshan, H., & Wardle, C. (2017). Information disorder: Definitions. *AA.VV., Understanding and Addressing the Disinformation Ecosystem*, 5–12.

European cooperation project on disinformation and fact-checking training. (2019). UNIVERSIDADE NOVA DE LISBOA. https://erasmus-plus.ec.europa.eu/projects/eplus-project-details#project/2019-1-PT01-KA203-060953

Evers, J., & Boer, F. de. (2012). *The qualitative interview: Art and skill*. Eleven International Pub.

Fontanin, M. (2019). Warriors, allies or spectators: A look at stakeholders' perception of the role of libraries and librarians in the fake news phenomenon. *Information and Technology Transforming Lives: Connection, Interaction, Innovation*.

Frau-Meigs, D. (2019). Information Disorders: Risks and Opportunities for Digital Media and Information Literacy? *Medijske Studije*, *10*(19), 10–28.

Guest, G., MacQueen, K. M., & Namey, E. E. (2012). *Applied thematic analysis*. Sage Publications.

Haasio, A. (2011). *Education and Research in Information Studies*. Imagine and Explore - Finnish Libraries Now! https://now.libraries.fi/education.html

Heinonen, A. (2019). *Yleisten kirjastojen ja mediakasvatuksen yhteinen tulevaisuus: Mediakasvatustyön rooli yleisissä kirjastoissa* [PhD Thesis].

Helminen, M. (2016). *Mediakasvatusta kirjastossa—Satumainen mediamatka* [PhD Thesis].

Hobbs, R. (2017). *Create to Learn: Introduction to Digital Literacy*. John Wiley & Sons, Incorporated.

Kohnen, A. M., & Mertens, G. E. (2019). "I'm Always Kind of Double-Checking": Exploring the Information-Seeking Identities of Expert Generalists. *Reading Research Quarterly*, *54*(3), 279–297. https://doi.org/10.1002/rrq.245

Kurttila-Matero, E. (2011). *School library: A tool for developing the school's operating culture*. University of Oulu.

Lahtinen, S. (2018). *Aikuisten mediakasvatus yleisissä kirjastoissa* [PhD Thesis].

Lankes, R. D. (2016). *The New Librarianship Field Guide*. MIT Press.

Lankshear, C., & Knobel, M. (2015). Digital literacy and digital literacies: Policy, pedagogy and research considerations for education. *Nordic Journal of Digital Literacy*, *9*, 8–20.

Lor, P. J. (2018). Democracy, information, and libraries in a time of post-truth discourse. *Library Management*, *39*(5), 307–321. https://doi.org/10.1108/lm-06-2017-0061

Mantzarlis, A. (2018). Fact-checking 101. *Ireton, Cherilyn; Posetti, Julie.Journalism, Fake News & Disinformafion: Handbook for Journalism Educafion and Training.Francia: Unesco*, 85–100.

Meho, L. I. (2006). E-mail interviewing in qualitative research: A methodological discussion. *Journal of the American Society for Information Science and Technology*, *57*(10), 1284–1295. https://doi.org/10.1002/asi.20416

Ministry of Education and Culture. (2016). *Public Libraries Act (1492/2016)*. http://www.finlex.fi/fi/laki/kaannokset/2016/en20161492.pdf

Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European Journal of General Practice*, *24*(1), 9–18.

Ojaranta, A. (2019). *Information literacy conceptions in comprehensive school in Finland: Curriculum, teacher and school librarian discourses*.

Pocock, T., Smith, M., & Wiles, J. (2021). Recommendations for Virtual Qualitative Health Research During a Pandemic. *Qualitative Health Research*, *31*(13), 2403–2413. https://doi.org/10.1177/10497323211036891

Rubin, V. L. (2017). News verification suite: Towards system design to supplement reporters' and editors' judgements. *Proceedings of the Annual Conference of CAIS/Actes Du Congrès Annuel de l'ACSI*.

Rubin, V. L., Chen, Y., & Conroy, N. K. (2015). Deception detection for news: Three types of fakes. *Proceedings of the Association for Information Science and Technology*, *52*(1), 1–4.

Russo, A., Jankowski, A., Beene, S., & Townsend, L. (2019). Strategic source evaluation: Addressing the container conundrum. *Reference Services Review*, *47*(3), 294–313. https://doi.org/10.1108/RSR-04-2019-0024

Sallmén, P. (2016). *Kirjasto mediakasvatuksen kolmantena tilana* [PhD Thesis].

Salomaa, S., & Palsa, L. (2019). Media literacy in Finland; National media education policy. *Opetus- Ja Kulttuuriministeriö [Opetus- Ja Kulttuuriministeriö]*.

Spurava, G., Kotilainen, S., & Holam, B. (2022). The role and readiness of librarians in promoting digital literacy: A case study from Latvia. *Culture Crossroads: Research Centre of the Latvian Academy of Culture*, *20*, 71–87.

Strömberg, A. (2020). *Informaatiotutkimuksen opetus suomalaisissa yliopistoissa: Opetussuunnitelmakatsaus* [PhD Thesis].

Sutton, B. (1993). The Rationale for Qualitative Research: A Review of Principles and Theoretical Foundations. *The Library Quarterly*, *63*(4), 411–430. https://doi.org/10.1086/602619

Tekoniemi, S. (2021). *Fact-checking Meets with Media Education: Evaluating A Workshop in Higher Education* [Master's Thesis of Digital Literacy Education]. Faculty of Information Technology and Communication Sciences, Tampere University.

Tekoniemi, S., Kotilainen, S., Maasilta, M., & Lempiäinen, K. (2022). *Fact checking as digital media literacy in higher education*. Media, Technology and Learning seminar.net, ACCEPTED.

Togia, A., & Malliari, A. (2017). Research Methods in Library and Information Science. In S. Oflazoglu (Ed.), *Qualitative versus Quantitative Research*. InTech. https://doi.org/10.5772/intechopen.68749

Tucker, J. A., Theocharis, Y., Roberts, M. E., & Barberá, P. (2017). From Liberation to Turmoil: Social Media And Democracy. *Journal of Democracy*, *28*(4), 46–59. https://doi.org/10.1353/jod.2017.0064

VanderStoep, S. W., & Johnston, D. D. (2009). *Research methods for everyday life: Blending qualitative and quantitative approaches*. Jossey-Bass.

Walsh, J. (2010). Librarians and controlling disinformation: Is multi-literacy instruction the answer? *Library Review (Glasgow)*, *59*(7), 498–511. https://doi.org/10.1108/00242531011065091

Wardle, C. (2018). The Need for Smarter Definitions and Practical, Timely Empirical Research on Information Disorder. *Digital Journalism*, *6*(8), 951–963.

Wardle, C., & Derakhshan, H. (2017). Information disorder: Toward an interdisciplinary framework for research and policy making. *Council of Europe Report*, *27*.

Wildemuth, B. M. (Ed.). (2017). *Applications of social research methods to questions in information and library science* (Second edition). Libraries Unlimited.

APPENDICES

Appendix 1

Tampere University

Tampere University
Interviews with information studies experts' representatives
Informed consent form template for interviewees

This interview is carried out as part of the master's degree study in Digital Literacy Education at Tampere University. The study is titled "**Library and Information Science Experts' Perceptions on Fact-Checking as Digital Literacy**" (working title) and is part of the ERASMUS+ project titled as "Fact-checking Project in Europe" which is exploring fact-checking and dis/misinformation in higher education and journalism for developing a joint European study module. This thesis will be published on Tampere University library Trepo by Dec 2021 or Jan 2022.

Potential risks and discomforts: There are no anticipated risks to your participation. When you feel some discomfort at responding some questions, please feel free not to answer them. If you decide that you want to stop during the course of the interview, then it is possible to do so at any time, without having to give a reason. Moreover, you have a right to the deletion of your data from the project after the interview has concluded.

Confidentiality: The data obtained from this interview, such as the interview recording and transcripts, will only be used by the current study and the ERASMUS+ project conductors for analysis and to inform the further project activities described above. It may also be included in possible project reports or research publications. The acquired data might moreover be used in future projects investigating a similar topic to advance knowledge in the area, but never for other purposes, such as economic gain. Everything you say to us is kept confidential: **in the reports your anonymity will be secured, for example, female 1/ male 1.**

Participation and withdrawal: If you have volunteered to participate in this interview, you may withdraw at any time without consequences of any kind. During the interview, you may also refuse to answer any questions you are reluctant to answer, and still remain in the study. You may be withdrawn from this research if circumstances arise which warrant doing so (e.g. conflict of interests).

Title of the thesis:

Library and Information Science Experts' Perceptions on Fact-Checking as Digital Literacy

Interview Guideline

Digital literacy and fact-checking

- Definition of 'digital literacy' and understanding in Library and Information Science (LIS) context
- Skills needed for a digitally literate individual
- Definition of 'fact-checking' and understanding in LIS context
- Information disorder and understanding in LIS
- Role of digital literacy and fact-checking towards information disorder issue

Finnish librarians and digital literacy education

- Role of librarians in promoting digital literacy and fact-checking
- Aspects of librarians' duties associated with this role(s)
- Skills needed for librarians as promoters of digital literacy
- Finnish librarians' readiness for the role(s)
- Trainings/programmes in digital literacy and fact-checking for LIS students
- Future picture of LIS professions and their higher education in Finland

Codes and Themes acronyms:

Appendix 3

DL: digital literacy
FC: fact-checking
ID: information disorder
LIS HE: LIS higher education
PLBN: public librarian
PLB: public library

Theme 1: definitions/concepts/natures

Code	Theme	Concept
associated with: flood of information	concept	ID
associated with: information overload	concept	ID
associated with: information poverty	concept	ID
concept confusion	concept definition	ID Literacy concept: DL
contextual	nature	Literacy concept: DL FC ID
covered in IL	definition	Literacy concept: DL
covered in ML	definition	Literacy concept: DL
difficult to define	definition	FC
		Literacy concept: DL
digital-based	nature	Literacy concept: DL
expert level	nature	FC
expert level: journalists	nature	FC
expert level: media	nature	FC
human-based	nature	ID
interactive	nature	Literacy concept: DL
motivation-based: willingness to learn	nature	Literacy concept: DL
motivation-based	nature	FC
new concept	concept definition	ID FC Literacy concept: DL
root in IT	concept	Literacy concept: DL
skill-based	nature	Literacy concept: DL
social phenomena	nature	ID
social media related	concept	FC
Sociocultural	nature	ID
uncertain answer	concept readiness	FC PLBN

Theme 2: knowledge

Code	Theme	Concept
digital environment knowledge	knowledge	literacy concept: DL PLBN

general knowledge	knowledge	literacy concept: DL PLBN
information system knowledge	knowledge	literacy concept: DL PLBN

Theme 3: skills/ duties/ roles

Code	Theme	Concept
access (info, tool, space)	conditions duties	literacy concept: DL public librarian ID
acquisition	duties	public librarian
communication	skills	public librarian
content creation	skills duties	literacy concept: DL public librarian
critical thinking	skills	literacy concept: DL active citizenship
cross-checking	skills	FC
customer service	duties	PLBN
digital ethics	skills	literacy concept: DL
discerning information needs	skills	literacy concept: DL
DL	skills	PLBN
education	duties	PLBN
evaluation	concept skills skills	FC literacy concept: DL
IL	skills	PLBN
lifelong learning	education skills	literacy concept: DL active citizenship
navigational skills	skills	literacy concept: DL PLBN
pedagogical skills	skills	PLBN
search	skills	literacy concept: DL PLBN
search/investigation	skills	FC
technical skills	skills	literacy concept: DL PLBN
willingness to learn	attitude	PLBN

Theme 4: age groups

code	main group	theme
adult	target groups	PLB
children	target groups	PLB
elder	target groups challenge	PLB
inclusiveness	challenge duties target groups	PLB
middle age	target groups challenge	PLB

not in education system groups	target groups	PLB

Theme 5: education/trainings

Code	Theme	Institute
basic LIS studies	education	Oulu
critical thinking	education	TAU
DL&FC: content creation	education	SEAMK
DL&FC: embedded	education	Oulu
DL: embedded	education	Abo Oulu SEAMK TAU
DL: theoritical	education	Abo
FC: embedded	education	Abo Oulu TAU
FC: theoritical	education	Abo
IL: embedded	education	Oulu TAU
IL: prominent	education	TAU
IL: skills: information seeking	education	LIS HE
information experts information experts information experts	aim	Abo Oulu TAU
internships	education	TAU
search	education	SEAMK

Theme 6: challenges/advantages

Code	Theme	Concept
Skills: disparity	challenge	PLBN
budget and resources	challenge	PLBN
constant change in technology	challenge	LIS HE
difficult to evaluate the skills	challenge	PLBN
divergence in the LIS field	advantage	LIS HE PLBN
High level education	advantage	PLBN
education	challenge	PLBN
fast technology development	challenge	Literacy concept PLBN PLB
Female dominant	challenge	PLBN
generation gap	advantage challenge	PLBN
good capabilities	advantage	PLBN: Finland
lack of IT knowledge in the field	challenge	LIS HE

lack of motivation	challenge	PLBN
lack of staff	challenge	PLB
loss of applied science universities	challenge	LIS HE
network structure	advantage	PLB
organizational structure	challenge	PLB
position	advantage challenge	PLBN LIS HE PLB
priorities	challenge	PLBN PLB
quite ready	advantage	PLBN
skills	challenge	PLBN
trust issue	challenge	PLB
uncertain answer	-	PLBN