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Susanna Rivinen

Developing Media Literacy Geragogy for Older People through Design-based Research

LAPIN YLIOPISTO
UNIVERSITY OF LAPLAND

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To my beloved family

ABSTRACT

Susanna Rivinen
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The main aim of the present dissertation is to extend the understanding of media literacy pedagogy theoretically and conceptually to better include older people's media literacy. As a result, and its main contribution, this study introduces the new concept of *media literacy geragogy*. At the same time, the another aim of this study is to further develop the contents and practices of teacher education to better respond to the need to add media literacy themes, especially from the perspective of older people. Because of these goals, the main research problem of this study is as follows: *What kind of media literacy geragogy supports older people's media literacy?* The research problem is sought to be answered through three qualitative sub-studies, for which a number of research questions were set. To meet the theoretical and practical goals, the design-based research (DBR) method was used in the present study. This research is also a deductive study guided by the traditionally understood notion of media literacy, divided into three dimensions of use, understanding, and creation. In addition, the topic is approached through geragogy and the concept of "older people". Through the used methods and theories, it is thus possible to answer the set research questions posed in the sub-studies and the main research problem as well as develop practice and theory. The research data mainly consist of qualitative data, which are supported by a small body of quantitative data collected during the second sub-study.

At the beginning of the research process, the first sub-study examined previous research literature in the field through a systematic literature review. The literature review included a total of 40 international empirical studies that reported media literacy interventions for older people between the years 2005 and 2019. The literature review specifically explored how media literacy could be promoted among older people. In the second sub-study, research data were collected from 16 older

people and 15 professionals working with them during four participatory creative workshops in Rovaniemi and Helsinki. In the third sub-study, data were collected not only from older people (n = 4) and professionals (n = 11) but also from 22 students of teachers' pedagogical studies at the University of Lapland. Sub-studies II and III focused on finding out, in particular, how media literacy interventions for older people could be implemented in the opinion of the participants.

The literature for the first sub-study was retrieved from international online databases. The data of the second sub-study were collected through a case exercise from older people and professionals and a questionnaire conducted exclusively for the older people taking part in participatory creative workshops. In the last sub-study, data were collected from teacher students during the designed and piloted course on the basis of a written assignment on older people's media literacy intervention and a presentation based on the assignment. Based on the presentations, older people and professionals provided written and oral feedback at an evaluation workshop held at the end of the course. The qualitative data in sub-studies I–III were analyzed by content analysis method.

During the research process and as a result of the present dissertation, a total of eight design principles to foster older people's media literacy and a new "Older People, Media Education, and Facilitation of Learning" course for the teachers' pedagogical studies were developed. The results suggest that media literacy geragogy in older people is a broad and multidimensional issue and that it needs to 1) *be based on the older people's own needs*, 2) *approach media literacy holistically*, 3*) use various pedagogical approaches*, 4) *utilize warm and socially skilled instructor(s)*, 5) *support cognitive skills*, 6) *support empowerment*, 7) *be systematic and continuous*, and 8) *increase cross-sectoral cooperation*. The outcomes of the present study are particularly useful for those who design and implement older people's media literacy. The results can also benefit anyone interested in the topic who wants to broaden their understanding of media literacy, especially from the perspective of older people. The present study thus provides a good foundation for media literacy geragogy; however, more practical implementation and research is needed in the future. The present study also opens up a debate on the development of teacher education, in particular with regard to older people and their media literacy.

Keywords: older people, media literacy, geragogy, media literacy geragogy, design-based research, teacher education

TIIVISTELMÄ

Susanna Rivinen
Ikäihmisten medialukutaidon geragogiikan kehittäminen
design-perustaisen tutkimuksen keinoin
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Tämän väitöskirjan ensisijaisena tavoitteena on laajentaa teoreettista ja käsitteellistä ymmärrystä medialukutaidon pedagogiikasta käsittämään paremmin ikäihmisten medialukutaidon näkökulman. Tutkimuksen tuloksena esitellään siten uusi käsite *medialukutaidon geragogiikasta*, joka on tämän tutkimuksen pääkontribuutio. Samalla tämän tutkimuksen toisena tavoitteena on kehittää opettajankoulutuksen sisältöjä ja käytänteitä vastaamaan paremmin tarpeeseen lisätä medialukutaidon teemoja erityisesti ikääntyneiden näkökulmasta. Tavoitteiden saavuttamiseksi väitöskirjan pääongelmaa: *Millainen medialukutaidon geragogiikka tukee ikääntyneiden medialukutaitoa?* lähestytään tässä tutkimuksessa yhteensä kolmen laadullisen osatutkimuksen avulla, joita varten asetettiin useita omia tutkimuskysymyksiä. Tässä tutkimuksessa käytetään design-perustaisen tutkimuksen (DBR) menetelmää ja tutkimus on deduktiivinen tutkimus, jota on ohjannut perinteinen käsitys medialukutaidon käsitteestä. Medialukutaito käsitetään tässä tutkimuksessa kolmen osa-alueen kautta, jotka ovat: käyttö, ymmärrys ja tuottaminen. Lisäksi aihetta lähestytään geragogiikan ja ”ikäihmisen” käsitteen kautta. Valittujen menetelmien ja teoreettisten viitekehysten avulla pystytään siten vastaaman asetettuihin tutkimuskysymyksiin sekä kehittämään teoriaa että käytäntöä tavoitteiden mukaisesti. Väitöskirjan tutkimusaineisto koostuu pääasiassa laadullisista aineistoista, poikkeuksena pieni määrällinen tutkimusaineisto, joka kerättiin osana toista osatutkimusta.

Tutkimusprosessin alussa, ensimmäisessä osatutkimuksessa perehdyttiin aiempaan kansainväliseen empiiriseen tutkimukseen systemaattisen kirjallisuuskatsauksen avulla. Kirjallisuuskatsaus sisälsi yhteensä neljäkymmentä empiiristä tutkimusta, jotka raportoivat jostakin ikäihmisten medialukutaidon interventiosta vuosina 2005–2019. Kirjallisuuskatsauksessa keskityttiin selvittämään erityisesti sitä, miten ikäihmisten medialukutaitoa voitaisiin edistää. Toisessa osatutkimuksessa tutkimus-

aineisto kerättiin kuudeltatoista ikäihmiseltä ja viideltätoista heidän kanssaan työskentelevältä asiantuntijalta Rovaniemellä ja Helsingissä järjestetyissä osallistavissa työpajoissa luovin tavoin. Kolmannessa osatutkimuksessa tutkimusaineistoa kerättiin ikäihmisten (n = 4) ja heidän kanssaan työskentelevien asiantuntijoiden (n = 11) lisäksi myös kahdeltakymmeneltäkahdelta Lapin yliopiston erillisten opettajan pedagogisten opintojen opiskelijalta. Osatutkimukset II ja III keskittyivät pääsääntöisesti selvittämään, miten ikäihmisten medialukutaidon interventioita voitaisiin toteuttaa osallistujien mielestä.

Ensimmäisessä osatutkimuksessa aineistonkeruu toteutettiin verkossa olevien kansainvälisten tietokantojen avulla. Toisessa osatutkimuksessa tutkimusaineisto kerättiin ikäihmisille ja asiantuntijoille suunnatun case tehtävän ja pelkästään ikäihmisille toteutetun kyselyn avulla suunnittelutyöpajoissa. Viimeisessä osatutkimuksessa aineistonkeruu toteutettiin osana suunniteltua ja pilotoitua kurssia, minkä aikana opettajaopiskelijat tuottivat pienryhmissä kirjallisen tuotoksen ja sen pohjalta pidetyn esityksen ikäihmisten medialukutaidon interventioista. Esitysten pohjalta kerättiin suullista ja kirjallista palautetta ikäihmisiltä ja asiantuntijoilta kurssin lopuksi pidetyssä arviointityöpajassa. Kaikkien osatutkimusten laadullinen aineisto analysoitiin sisällönanalyysimenetelmällä.

Tutkimusprosessin myötä ja tämän väitöskirjan tuloksena syntyi yhteensä kahdeksan suunnitteluperiaatetta tukemaan ikäihmisten medialukutaitoja ja kehitettiin uusi ”Ikäihmisten mediakasvatus ja oppimisen ohjaus” kurssi Lapin yliopiston opettajan pedagogisiin opintoihin. Tulokset osoittavat, että medialukutaidon geragogiikka on laaja ja moniulotteinen asia, ja sen tulisi suunnitteluperiaatteiden perusteella: 1) *perustua ikäihmisen omiin tarpeisiin*, 2) *lähestyä medialukutaitoa kokonaisvaltaisesti*, 3) *käyttää erilaisia pedagogisia lähestymistapoja*, 4) *hyödyntää pehmeitä ja sosiaalisia taitoja omaavia ohjaajia*, 5) *tukea kognitiivisia taitoja*, 6) *tukea voimaantumista*, 7) *tarjota systemaattista ja jatkuvaa tukea*, ja 8) *lisätä monialaista yhteistyötä*. Tutkimustulokset tukevat ennen kaikkea ikäihmisten medialukutaidon koulutuksen suunnittelusta ja toteutuksesta vastaavia tahoja. Tutkimuksesta voivat hyötyä myös muut aiheesta kiinnostuneet, sillä tämän tutkimuksen myötä voi laajentaa omaa käsitystä medialukutaidosta, erityisesti mitä se tarkoittaa varttuneemman sukupolven näkökulmasta. Siten tämä tutkimus tarjoaa hyvän pohjan medialukutaidon geragogiikalle, vaikka lisää käytännön toteutuksia ja tutkimusta tarvitaan myös tulevaisuudessa. Lisäksi tämä tutkimus avaa keskustelun opettajankoulutuksen kehittämisestä, erityisesti ikäihmisten ja heidän medialukutaidon näkökulmasta.

Asiasanat: ikäihmiset, medialukutaito, geragogiikka, medialukutaidon geragogiikka, design tutkimus, opettajankoulutus

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In 2011, I started studying in the Media Education Master's Program at the University of Lapland. In the early days of my studies, I didn't know exactly where my path would lead, but during my studies, interest in media education increased and eventually took me along. I had always been interested in teaching and guidance as well, which is why I studied teachers' pedagogical studies at the University of Lapland alongside my master's studies. It is also said that the will to eat grows by eating, and the idea of postgraduate studies began to slowly mature in my mind. In the end, the path I chose was by no means easy, but now I couldn't be any happier about this adventure that eventually led me to this very point and has given me so much!

First, I would like to express my gratitude to my supervisor, Associate Professor Päivi Rasi, who has been one of my role models and an inspiration since I first started my studies at the university. Even then, I was deeply impressed by her professionalism and enthusiasm to teach, do research, and develop the field of media education; and she still manages to amaze me. I am forever grateful to her for all the support and guidance she has given me during these years, both as a teacher/supervisor and later as a colleague. I would also like to thank my second supervisor, Docent Hanna Vuojärvi, for her expertise, hard-working nature, and awesome attitude in working life and life in general. Thank you for all the encouragement and support; you have certainly not been chosen in vain as teacher of the year at the University of Lapland! Moreover, many thanks to my dissertation examiners, Professor Eija Kärnä and Professor Renee Hobbs, whose academic work and achievements I have been able to follow with great respect and interest, especially in recent years when I have been working on my dissertation. I am also grateful to University Lecturer Suvi Lakkala and Lauri Palsa for providing valuable comments on the first version of the dissertation.

I would like to thank the University of Lapland and the Esko Riepula grant, which played a key role, especially in the finalization phase of the dissertation. Many thanks also goes to the Faculty of Education and particularly to the current and former members of the Media Education Hub (MEH), with whom I have been allowed to work. This dissertation was conducted partly as part of the IkäihMe Project coordinated by MEH, which is why special thanks goes to the fantastic team of the whole IkäihMe Project, which in addition to me and the dissertation supervisors included Sirpa Purtilo-Nieminen, Timo Cornér, and Heikki Kynäslahti. Nor can I forget the Continuing Education Unit, which has played a significant role, especially

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Rovaniemi, 21 August 2021
Susanna Rivinen

List of Original Articles

The present thesis is based on the following three articles, which are hereafter referred to as sub-studies I, II, and III:

Sub-study I
Rasi, P., Vuojärvi, H., & Rivinen, S. (2021). Promoting media literacy among older people: A systematic review. *Adult Educational Quarterly, 71*(1), 37–54. https://doi.org/10.1177/0741713620923755

Sub-study II
Rivinen, S. (2020). Media education for older people—Views of stakeholders. *Educational Gerontology*, *46*(4), 195–206. https://doi.org/10.1080/03601277.2020.1725307

Sub-study III
Rivinen, S., Rasi, P., Vuojärvi, H., & Purtilo-Nieminen, S. (in press). Teacher students' designing of media education for older people: Creative and need-based pedagogies emphasized. *Seminar.net. International Journal of Media, Technology & Lifelong Learning*.

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1 INTRODUCTION

1.1 The Background of the Study

The main aims of this design-based research (DBR) study are, firstly, to introduce the new concept of *media literacy geragogy* and thus to expand media literacy pedagogy to better understand the perspective of older people, and secondly, to further develop teacher education to better foster teacher students' ability to promote older people's media literacy (Design-Based Research Collective, 2003). This study situates in the field of *media education*, which is an area of teaching, guidance, and education with the aim of developing *media literacy* for all ages (see, e.g., Buckingham, 2003; Chu & Lee, 2014) although it also has confluences with adult education and educational gerontology. The concept of media literacy is one of the key concepts in this study, understood in its traditional sense to mean the ability to access and use digital technology and media, an understanding and critical analysis of different media texts and content, and the ability to create them (Aufderheide, 1993; see also Ofcom, 2020), which is considered a lifelong learning process (see also Brites et al., 2018; Hobbs, 2010; Rasi et al., 2019). In order to develop and guide media literacy of older people (65+) (Lee et al., 2018; Ofcom, 2020), *geragogy* is needed. Generally, geragogy refers to pedagogy aimed specifically at older people, that is, the way in which teaching and education should be organized (Findsen & Formosa, 2011; Formosa, 2012). As a main outcome, this study presents the new concept of media literacy geragogy, which is a combination of the two existing concepts as well as eight design principles to support it. These goals are achieved by answering the main problem posed by the study: *What kind of media literacy geragogy supports older people's media literacy?* The task set by the research problem is approached in the sub-studies through a systematic literature review and from the perspective of older people, professionals working with them, and teacher students.

The present study is topical and important as population aging is a noticeable, clear phenomenon where the number of people aged 65 and over is already a large but still-growing group (see, e.g., United Nations, 2019; WHO, 2013). According to forecasts and statistics, by 2050, the number of individuals 65 or older is expected to be 1.5 billion of the world's population (United Nations, 2019). In fact, the World Health Organization (WHO, 2013) predicts that those 65 years of age or older will be more than one quarter (27%) of the European population by 2050. Considered even more closely and in the context of the present study, in Finland, the number of older people (65+) is estimated to rise from 19.9% to 26% by 2030,

and by 2060, 29% of the total population will be older people (Official Statistics of Finland [OSF], 2015; see also World Bank, 2019). In this regard, it very much appears that population aging is perhaps one of the most significant trends in the world at the moment (see also Findsen & Formosa, 2016).

It is to be expected that such a demographic change brings new opportunities and challenges to families, healthcare, business, society, government, and other actors in a mediated and digitalized world where digital technologies and media have become an increasing part of our daily lives (see also Abad Alcalá, 2019; Cerna et al., 2020; Czaja & Sharit, 2013). Today, most services have shifted online, and the activities of individuals and society are more media-mediated and dependent on the media than before (see also European Commission, 2020). Such changes enable new ways of interaction (e.g., from local to global, in real time online), new service models (e.g., electronic social and health services, e-banking), and electronic government (e.g., electronic citizen initiatives and forms) (European Commission, 2020; Vehko et al., 2019). Media also plays an important role in the lives of individuals, especially as we build our identity and worldview through it (Buckingham, 2003). Therefore, we can consider media as one of the "major contemporary means of cultural expression and communication; to become an active participant in public life necessarily involves making use of the modern media" (Buckingham, 2003, p. 5). However, the use of various services to participate in society; or, for example, democracy requires individuals' learning and use of digital technologies and media, which in turn emphasizes their media literacy (see also Abad Alcalá, 2019; Hobbs, 2010). Media literacy was in fact raised in 2018 to the level of an EU directive (2018/1808 EU) that obliges member states to promote citizens' media literacy. Thus, it is not unnecessarily claimed that media literacy is an important civic skill needed in all age groups to cope with everyday life (Abad Alcalá, 2019; Petranova, 2013; Rasi et al., 2019).

The digital skills of Finns are generally at a good level according to the latest digital skills survey by the Digital and Population Data Services Agency (2020), the aim of which was to collect data on Finnish digital skills, the amount of digital support needed, and the target groups that most need support. According to the survey, many of the approximately 14,000 respondents expressed particular concern about the digital skills of the aging population. The survey revealed that not all older people may be able to take care of their own personal affairs, for example, due to physical or memory issues, which is why relatives have reported that they also take care of things on behalf of their own parents or older relatives (Digital and Population Data Services Agency, 2020). In this case, however, it is good to remember that, for example, handling banking matters on behalf of another without an official power of attorney is not permitted. Moreover, older people's own responses to the survey expressed their wish that in the future they would still be able to take care of things face-to-face (Digital and Population Data Services Agency, 2020). The results are

comparable to a previous study whose main outcome was that the mental and physical wellbeing of older people in the Arctic in particular should be supported by the provision of age-friendly services, which society has not as of yet fully facilitated (Begum, 2019). From the perspective of the present study, the development of services alone may not be enough, and the media literacy of older people also needs to be developed.

At the national level, the abovementioned digital skills survey provides some indications of the current state of Finns' digital skills. However, it is important to note that these results reflect only a certain dimension of media literacy (use) and do not take them all into account (use, understand, create), so the survey cannot be said to be fully answering the question of what the current state is of media literacy in older people (Aufderheide, 1993; see also Ofcom, 2020). Therefore, it would be important to find out the state of media literacy among older people and take account of all its dimensions, such as through a barometer, as has been done with the younger generation (see, e.g., Merikivi et al., 2016). While there is still work to be done in this regard, we are moving toward a more egalitarian society in which older people are better taken into consideration. This is supported by the fact that Finland has recently set new national guidelines for the implementation of media literacy, and, for the first time, the guidelines emphasize the development of media literacy in the aging population (see Salomaa & Palsa, 2019). Generally, the guidelines are aimed at extending their target group to older people as well because in the national guidelines, aging has been seen to affect the themes and target group of media education. However, the guidelines do not contain much content specifically related to older people's media literacy but mention briefly, for example, the importance of promoting older people's self-education and the use of e-services (Salomaa & Palsa, 2019). While media education guidelines and policies now take better account of older people, clearer content should be added, such as on how, where, or by whom media literacy guidance should be provided for older people.

The present study is based on the premise that most of the practical work and research in the field of media literacy is currently focused on children and young people as well as working-age adults, while attention to older people (65+) has been less in this respect (Kanerva & Oksanen-Särelä, 2021; Lee et al., 2018; Petranova, 2013; Rasi et al., 2016). Nonetheless, research and practical work on older people has received more interest recently, and it continues to grow, for instance, due the global COVID-19 pandemic, which has further emphasized the use of different digital technologies and media (see also Kanerva & Oksanen-Särelä, 2021). Especially in recent times, interest in older people's news and health literacies in particular has grown (Eronen et al., 2019; Guess et al., 2019; NPR, 2020) although research relating to the use of devices (e.g., tablets, computers) and the Internet by older people can be found that is quite comprehensive and that has been steady over time (see, e.g., Gall, 2014; Gatti et al., 2017; González et al., 2015; Vaportzis et al., 2017; Wong et al.,

2014). Moreover, most studies seem to be combinations of different dimensions of media literacy rather than properly focusing on just one dimension of media literacy, such as production (see, e.g., Gamliel, 2016; Strong et al., 2012). Nor is there as much attention paid to understanding and creating dimensions of media literacy as to the use of digital technology and media. Also, the amount of research in which older people themselves are asked about education and learning is relatively low (Boulton-Lewis, 2010). For these reasons, this study has been launched, which takes into account all dimensions of media literacy (use, understand, create) and older people's own perspectives on the development of their concerns, which has been paramount to meet the needs of the target group (Aufderheide, 1993; see also Ofcom, 2020).

As already mentioned briefly, the present study is also contextualized within the field of Finnish teacher education for adult education, which is why it is necessary to look at media literacy from this perspective as well. Firstly, it appears that the main emphasis and goal of media literacy in these programs is on the dimension of the use of media literacy (e.g., promotion of concrete Internet technology [IT] skills) rather than a critical understanding and the production of various media content (Vuojärvi et al., 2021). Secondly, it seems that the teacher education for adult education is still strongly focused more on younger generations and working-age adults than on older people. Clear references to content related to media literacy in older people were found in only one program, where they are described as their own specific target group (Vuojärvi et al., 2021). This exception is the University of Lapland's teachers' pedagogical studies (60 European Credit Transfer System credits [ECTs]), which is one of the research sites of the present study. However, teachers' pedagogical studies did not include a course related to older people before the year 2019, and was a result of the present study, although studies are strongly oriented toward adult education. Nevertheless, these studies have provided skills and pedagogical competence for the whole field of education (e.g., adult education centers, liberal adult education institutions), which means that students can work with learners of all ages, including older people, in the future (Faculty of Education, Continuing education unit in the field of teaching and education, 2020). Furthermore, it would be good to look at the issue more broadly, not just from the point of view of teacher education, because as Tullo et al. (2016, p. 698) state: "Whatever the career intentions of students entering higher education (HE), graduates are likely to work with older people in some capacity; therefore, they need to understand the significance and relevance of aging in the modern world." For these reasons, in teacher education and higher education in general, the target groups at the end of the life course should be emphasized and considered in the same way as the target groups at the beginning of the life course in order for students to develop adequate skills, for instance, to foster older people's media literacy in the future.

The present study focuses on the development of media literacy geragogy for older people, which also provides valuable information on and insights into the media

literacy situation for that target group and its implementation and development. To make it possible to build, create, and develop the concept of a geragogy of media literacy, a variety of methodologies and theories have been combined. As a result of the present study, eight design principles for media literacy geragogy have been developed that can be used to promote media literacy in older people. Moreover, a course related to media literacy for older people has been designed, piloted, and developed for the teachers' pedagogical studies at the Faculty of Education of the University of Lapland. No similar scientific research has been conducted before, which is why this study is groundbreaking and fills the gap in the research field in this respect. The present study also develops the conceptualization of media literacy and practical assistance for facilitators, educational institutions, and all who are interested in developing their media literacy education, practices, and content toward more age-friendly and lifelong learning.

1.2 The Process of the Study

The research process has been conducted through following the principles of DBR (Design-Based Research Collective, 2003; Wang & Hannafin, 2005). The DBR process started with the launch of the IkäihMe Project[1] in November 2018 and continued until 2021. The collection of research data focused specifically on the period 2018–2020. Figure 1 illustrates a more detailed timeline of the research process progress.

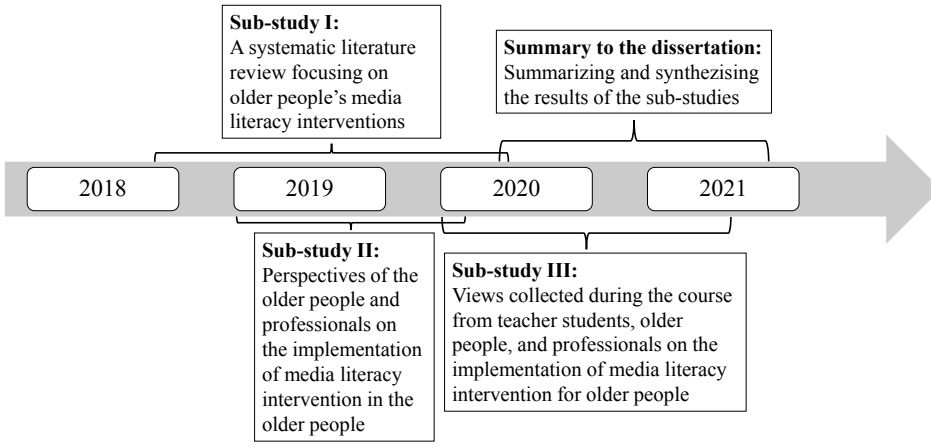

Figure 1. *The progress of the research process.*

1 The IkäihMe Project: Developing Teacher Education of Adult Educators—Targeting Older People's Media Education (IkäihMe) Project (2018–2021), funded by the Finnish Ministry of Education and Culture (OKM/85/592/2018).

At the end of 2018, I started to work in the IkäihMe Project, which aimed to produce, pilot, and further develop a research-based digital study module (teaching and learning practices, contents, materials) that focuses on older people's media literacy and digital skills as well as their learning and teaching. The project was coordinated by the University of Lapland and carried out together with the University of Helsinki. To meet the aim of the project, at the University of Lapland an "Older People, Media Education, and Facilitation of Learning (2 ECTs)" course was developed as part of teachers' pedagogical studies as was a course called "Older People and Media Education (2 ECTs)" for subject teachers in adult education at the University of Helsinki (IkäihMe Project, 2020). The new course and the teacher educational program organized at the University of Lapland follow a blended-learning approach (Boelens et al., 2017; Graham, 2006). The course, and in particular its first implementation, served as the research setting for this dissertation as it enabled the collection of research data and a more detailed examination of the topic.

The first sub-study was a systematic literature review, which was properly launched in November 2018, by reviewing previous literature although some data collection had already started in 2016. The aim of the literature review was to examine media literacy interventions for older people, and, as a result, a total of 40 empirical studies were found for the years 2005 to 2019. Based on the research located, the aim was to better understand which dimension of media literacy (use, understand, create) the interventions focused on, what pedagogical approaches have been used, and what results and implications the studies report on the basis of the interventions carried out. The systematic literature review was written and submitted to an academic journal for review in 2019. It was published online in early 2020 and in 2021 in a print journal.

The second sub-study partially overlapped with the first sub-study when the data collection was carried out in early 2019. The aim of the second sub-study was to research the topic at a more local level as the literature review clarified the topic at essentially a global level. Therefore, in the second sub-study, the aim was to expand the topic in more detail to the views of Finnish older people and the professionals working with them. A total of four participatory creative workshops for older people and professionals were designed and organized for this purpose in Rovaniemi and the Helsinki Metropolitan Area. The main aim of sub-study II was to learn about older people's own perceptions of their media literacy levels and which dimensions of media literacy (use, understand, create) should be strengthened and developed as well as which pedagogical approaches are suitable for guiding media literacy in older people. The second sub-study was written and submitted during 2019 and published in a scientific journal in early 2020. Based on the results of sub-studies I–II, the "Older People, Media Education, and Facilitation of Learning" course was designed and piloted for the first time during the academic year 2019–2020 and preliminary design principles could be outlined.

The designed and piloted course enabled the collection of research data during the course from teacher students as well as older people and the professionals working with them. The third sub-study thus broadened the perspective to teacher students who may work with older people in the future (see also Tullo et al., 2016), and it focused only on the Rovaniemi area. During the piloted course, teacher students in small groups designed media literacy interventions for older people and presented the designs to older people and professionals at the end of the course in an evaluation workshop. The older people and professionals provided feedback on the presentations, which was also included as research data in this sub-study. The aim was again to find out what dimension of media literacy (use, understand, create) the teacher students' designs focused on, what kind of pedagogical approaches were used in them, and what kind of feedback the designs received from stakeholders. Based on the research results, design principles for media literacy geragogy and the course could be further developed. The third sub-study was accepted for publication in a scientific journal in 2021.

The writing of this summary section of the dissertation was begun in 2020, partly simultaneously with the third sub-study. The summary brings together the three sub-studies as well as critically evaluates and discusses them and draws conclusions for the future. The main contribution of the dissertation is to present eight design principles to promote older people's media literacy and at the same time to introduce for the first time the new concept of media literacy geragogy.

1.3 The Outline and Aims of the Study

The overall aim of the present study is to broaden the understanding of media literacy pedagogy, both conceptually and theoretically, so that in the future the media literacy of older people will be better considered. In accordance with the DBR method, this study develops not only theory but also practice as the second goal of the study is to design, pilot, and further develop a course related to the media literacy of older people for teachers' pedagogical studies at the University of Lapland (Design-Based Research Collective, 2003). The developed "Older People, Media Education, and Facilitation of Learning" course thus develops the contents and practices of teacher education to better correspond to the media literacy needs of older people.

The specific aims of the present study are

1) to increase the understanding of the promotion of media literacy in older people and to report on international practical research on media literacy in older people (sub-study I);
2) to broaden the understanding of the state of older people's media literacy and how media education for older people should be implemented from the perspective of Finnish older people and professionals (sub-study II); and

3) to develop Finnish teacher education by designing, piloting, and further developing a new course related to older people's media literacy together with two previous sub-studies and to broaden the understanding of teacher students' perspectives on how media education for older people should be implemented, on the basis of which feedback from stakeholders (older people and professionals) is also collected (sub-study III).

After having presented the background and the process as well as the outline and aims of the present study, the key concepts and theoretical framework will be presented. The section on the key concepts and theoretical framework is followed by the research questions and methodology. Afterwards, in Chapter 5, the design principles for media literacy geragogy developed based on the results and conclusions of the present study are introduced. Lastly, the outcomes and conclusions of the present study are discussed in Chapter 6, which reviews and evaluates the study in general and presents the future implications.

2 KEY CONCEPTS AND THEORETICAL FRAMEWORK

This chapter presents the key concepts and theoretical framework of the present study, which have been the basis for the development of media literacy geragogy for older people through the DBR method. The results are a synthesis of the previous empirical studies in the field in the sense of traditionally understood concepts of media literacy (Aufderheide, 1993; see also Ofcom, 2020) and geragogy (see, e.g., Findsen & Formosa, 2011). In addition, the topic is addressed through the concept of "older people". Sub-studies I–III have also played a significant role in drawing the final results and conclusions. In the following sections, the key concepts and theoretical perspectives will be presented in more detail.

2.1 Defining the Concept of "Older People"

In the present study, the concept of *older people* is approached through the definition of age although there is no single agreed-upon definition of it, and, as Findsen and Formosa (2011, p. 92) state: "Nowadays ageing is increasingly complex, differentiated and ill-defined, as well as experienced from a variety of perspectives and expressed in different ways." However, according to Laslett (1996), an individual may have several ages in addition to chronological age, such as biological, personal, social, and subjective ages, through which age can be viewed. Similarities can also be found in the description of aging by Findsen and Formosa (2011, p. 9), which they see as follows: "Apart from being a demographic phenomenon, human ageing also constitutes an ongoing biological, psychological, and social process that is embedded within the dialectical relationship between individual agency and the societal structure" (see also Dannefer & Settersten, 2010). Therefore, the group considered older people, as well as aging, must be seen as a broader, more diverse, and multidimensional issue than a matter to be determined by chronological age alone (see also Dannefer & Settersten, 2010). Diversity is further enhanced by the fact that various terms can be used to define older, such as *senior citizens*, *older adults*, *aged people*, and *the elderly*, although the term "older people" is used systematically in this study. The term older people has been chosen for this study because it represents a commonly used term that seeks to describe the target group in a more age-friendly way, unlike, for example, the term "elderly," which, according to some sources, is perceived to have a negative or ageist image of the target group (see, e.g., Avers et al., 2011).

From a chronological point of view, a person over the age of 65 is commonly referred to as a person who has reached retirement age, and, due to their high

chronological age, they can be also defined as older people from that age onward (Lee et al., 2018; Ofcom, 2020). It is noteworthy, however, that the definition of older people varies according to context (Czaja & Sharit, 2013; Dannefer & Settersten, 2010; Findsen & Formosa, 2011; Orimo et al., 2006). For example, in most empirical social sciences, *later life* is calculated to begin at a certain calendar or chronological age, which, as with the United Nations, may be 60 years or, according to Eurostat, 65 years (Findsen & Formosa, 2011). There has also been discussion of a *third age,* which can be counted from 50 to over 90 years (Cusack, 2000), for example, and a *fourth age*, defined as the last years of adulthood, although setting an exact age limit for it is challenging (see, e.g., Higgs & Gilleard, 2016; Petrová Kafková, 2016). Raising the chronological age of older people has also been discussed, and, for example, one study recommends raising it to the age of 75 (Orimo et al., 2006). When viewed specifically in the context of Internet use (i.e., digital media), "older people" are generally defined as aged 65 or older in the research literature, while "older adults" are in some cases defined as starting at the age of 45 (Hunsaker & Hargittai, 2018). Furthermore, because the group of older people can be defined quite broadly and slightly differently on the basis of chronological age, it has been divided into even more specific categories within the group, as Lee et al. (2018, p. 250) have defined: "group 1 (youngest-old), ranging from ages 65 to 74 years; group 2 (middle-old), ranging from ages 75 to 84 years; and group 3 (oldest-old), aged more than 85 years" (see also Suzman & Riley, 1985). Despite the different age-related definitions, in the present study, all people aged 65 and over are defined as older people, as defined by WHO (2011) and Eurostat (2019) (see also Hunsaker & Hargittai, 2018). However, it is good to note an exception for the first sub-study, where older people were defined as starting as early as age 60, but otherwise the line of the present study is over 65 years of age. Also, it was not perceived necessary to divide older people into more specific age groups, for example, according to Lee et al.'s (2018) definition, as the number of older people in the present study is relatively small.

The aging of people can vary and progress at different speeds, including for different parts of the same individual (see also Laslett, 1996). Therefore, the definition of older people should consider their biological characteristics and state of health, which may not always correspond to the chronological age of the individual. From the point of view of *biological age*, the definition of an older people is significantly affected by their cognitive and physical characteristics, such as memory and vision, which may change and decline as they age (see, e.g., Findsen & Formosa, 2011; Lee et al., 2018). Changes in cognitive and physical abilities can also increase the need for outside assistance to maintain everyday activities. For these reasons, older people are often defined not only by chronological age but also by their physical characteristics, which are in transition as they age due to various diseases and physical injuries, which in turn can pose challenges to their economic and social relationships (see, e.g., Alpert, 2017; Fang et al., 2018). In addition to

physical health, it is, of course, important to look at the psychological health of older people because a person is a psycho-physical-social entity, where changes also occur in connection with personality and sense of self, for example (Findsen & Formosa, 2011). This also leads us to a *personal age*, where for "an individual is that moment in the life course which a man, a woman or a child himself or herself judges to have been reached" and is thus influenced by the goals and intentions set by the individual (Laslett, 1996, p. 35; see also Uotinen, 2005). In other words, this is the individual's own experience of how they have progressed in their own life projects, including the goals they have set and their achievements.

The health aspect (physical and mental health, cognitive ability) is an important perspective that changes especially with age and can be measured by different indicators. However, it is also important to look at older people's own perceptions of themselves (see also Silverstein, 2014). Here the *subjective age*, in other words, the individual's own perspective on how young or old they feel themselves to be or how they define and talk about aging, enters the picture (Laslett, 1996). Aging should also be viewed against the backgrounds of older people, such as life experience, cultural/ethnic background, literacy, level of education, abilities, and skills (Czaja & Sharit, 2013). The life course perspective is especially important for older people as they already have a long history and vast experience, which is valuable for learning something new. Also, the life expectancy has increased, the retirement age has been raised, and learning is seen as possible throughout life, which is also good to consider in terms of the course of life (see, e.g., Findsen & Formosa, 2011; Kinnari, 2020). Moreover, older people are likely to have a number of different life roles during their lives, such as consumers, citizens, leaders, partners, and experts, which can also change radically with age, such as retirement, widowhood, or becoming a grandparent (see, e.g., Vidovićová, 2018). These can be thought of as reflecting a person's *social age*, in other words, what their relation to the social world is at a particular stage of life and what roles that reflects from the perspective of the surrounding culture and society (Laslett, 1996; Séguy et al., 2019; Uotinen, 2005). At the same time, it involves certain duties and rights; for example, in Finland, from the point of view of legislation, you can retire at the age of about 65 or join the military service in the year you turn 18 (see also Séguy et al., 2019).

In conclusion, older people can too often be narrowly defined on the basis of only chronological age. However, in this study, older people are seen as a multidimensional and diverse group of people (see Dannefer & Settersten, 2010) who should be viewed at least from chronological, biological, personal, social, and subjective perspectives of age (Laslett, 1996). Older people can thus be defined in different ways and, broadly depending on the dimension in which it is considered, also using different terminology. The diversity of older people is also further enhanced by their levels of media literacy in addition to the aspects mentioned above, which are discussed in more detail in the next section.

2.2 Older People's Media Literacy

The present research is a deductive study that focuses on *media education* as part of teaching, education, and guidance to strengthen individuals' *media literacy* to function in media culture. The concept of media literacy is widely understood as the main goal of media education, and it has guided this study from the very beginning (see, e.g., Buckingham, 2003; Chu & Lee, 2014). There is no generally valid and unambiguous way to define the concept of media literacy (Potter, 2010), but this study is based on the well-known report of the National Leadership Conference on Media Literacy published by the Aspen Institute under the direction of Charles Firestone and with significant leadership from Elizabeth Thoman of the Center for Media Literacy (Aufderheide, 1993). The report has reached a historic position in the field of media literacy by documenting the consensus of conference participants. In the present study, media literacy is thus understood—according to the report through its traditional and perhaps most widely used definition—firstly, as individuals' *access* to and *use* of digital technology and media; secondly, as *critical analysis* and *understanding* various media texts and content (e.g., videos, texts, images, sounds, and their combinations); and thirdly, the *creation* of media texts and content (Aufderheide 1993; see also Ofcom, 2020). The report describes a person with the aforementioned skills (use, understand, create) as a media-literate person and states that "everyone should have the opportunity to become one" (Aufderheide, 1993, p. 1). From a life cycle perspective, there is no age limit for the development of media literacy, it occurs in all areas of human life, and it follows the general goal of education, being the goal of a better life (Pekkala, 2016). Nor can a media-literate person ever become "ready," which is why it is rather described as a lifelong form of learning and lifelong process (see, e.g., Brites et al., 2018; Rasi et al., 2019). In fact, media literacy has been identified by the Council of the European Union (2018) as one of the key competences for lifelong learning (see also Salomaa & Palsa, 2019).

Media literacy is a relatively new notion and can be understood as a broad and multidimensional concept that can be defined in a number of ways in the different disciplines in which it is practiced (Palsa & Ruokamo, 2015; Potter, 2010). Media literacy research and practical work are not limited to a specific field (e.g., education) but can also be carried out in, for example, media science and psychology, which may further contribute to the definition of media literacy. The definition of media literacy is also significantly influenced by society and evolving technology (Ptaszek, 2019). Especially now, technology and its development play a greater role in people's lives than before, and, as Czaja and Sharit (2013, p. 5) state: "Overall, technology is used in practically every aspect of everyday living." Thus, living an independent everyday life requires interaction with some digital technology or media, which in turn emphasizes the individual's media literacy and justifies the titling of media literacy as a civic skill. At least in Finland, media literacy is compared to the civic

skills needed to handle everyday matters and has also taken its place in political decision making (see, e.g., Salomaa & Palsa, 2019). This may not be the case in all countries, so it is good to note that the definition may vary in this respect as well.

The traditionally understood concept of media literacy (Aufderheide, 1993; see also Ofcom, 2020) has laid the foundation for the concept of media literacy, which has since been able to be expanded and defined in slightly different ways (see also Palsa & Ruokamo, 2015). This is reflected in the fact that there are several different partly overlapping concepts alongside media literacy, such as *multiliteracy* and *digital competence* (Forsman, 2018; Palsa & Ruokamo, 2015; Rasi & Kilpeläinen, 2015; Salomaa & Palsa, 2019). For example, the concept of multiliteracy is widely used at the national level, especially in the basic education curriculum, and in short, according to the Finnish National Board of Education (FNBoE, 2014, p. 20), it "refers to the skills of interpreting, producing and evaluating different texts" (see also Kupiainen et al., 2015; Palsa & Ruokamo, 2015). Multiliteracy is comprehended as a broad understanding of literacy that involves many other literacies, such as *cultural literacy*, *advertising literacy*, and also media literacy (FNBoE, 2014; Palsa & Ruokamo, 2015; Westby, 2010). However, media literacy is understood to focus more on the Internet and digital mediums although they also play a significant role in multiliteracy (Westby, 2010), and both can be considered as main goals of media education (Palsa & Ruokamo, 2015). According to Palsa and Ruokamo (2015, p. 110), multiliteracy could be described both as a pedagogical approach to the implementation of education and also as an educational outcome although "Compared with the media literacy articles, clear definitions of multiliteracies as an educational outcome or ability were hard to find in the multiliteracies articles, but teaching practices and pedagogical questions and content were addressed more thoroughly" (see also Ruokamo et al., 2016). As media literacy is widely described as an ability that accumulates throughout life and is seen as an outcome of media education rather than as a pedagogical approach, which also has a long history in the pedagogical and academic tradition, distinguishing, for example, the concept of digital competence, which has its roots in the EU's and Organisation for Economic Co-operation and Development's (OECD) skills policy on 21st-century skills (Voogt & Pareja Roblin, 2012; see also Centeno, 2020; Forsman, 2018), it is used in the present study through a traditionally understood definition (Aufderheide, 1993). Moreover, there is a desire in this study to use a slightly more limited concept to describe an issue that was originally used in the first sub-study from 2016 onward and has not needed to be changed since then.

After defining the concept of media literacy and in order to achieve the aims of the present study, it has been necessary to define more precisely the key areas of the measurement of media literacy. Measurement areas are obtained with the definition of media literacy, for example, through distinguishable dimensions (Ptaszek, 2019). Therefore, the present study refers to three dimensions of media

literacy—*use*, *understand*, and *create*—through which the results have also been examined in all the sub-studies (Aufderheide, 1993; see also Ofcom, 2020). The distinguishing of media literacy into three dimensions is not in itself a new thing as media literacy has already been divided into three to 11 different main areas before, depending on how media literacy is defined (Ptaszek, 2019). As noted earlier, in the present study, segregation is influenced by the way in which media literacy is defined but also by the desire to remain at a relatively general level to facilitate the application of the concept and a wider range of outcomes and perspectives (see also Palsa, 2016).

In light of previous knowledge, when reviewing practical work and previous empirical research on media literacy in older people, it is found that the number is lower compared to children, young people, and working-age adults (Petranova, 2013; Rasi et al., 2016) although the need for research and practical work on media literacy in older people has been identified since the 21st century (Hakkarainen et al., 2009; Pääjärvi & Palsa, 2015). The need for and importance of media literacy is also reflected in the positive effects on the lives of older people it can result in, such as improving quality of life, maintaining social networks, retaining one's independence, creating empowerment, and improving one's knowledge of health issues (see, e.g., Blažun, 2013; Eronen et al., 2019; Heart & Kalderon, 2013; Hobbs, 2011; Karavidas et al., 2005; Stephani & Kurniawan, 2018). According to Livingstone et al. (2005, p. 3), media literacy has a particular impact on the following three areas: "(i) democracy, participation and active citizenship; (ii) the knowledge economy, competitiveness and choice; and (iii) lifelong learning, cultural expression and personal fulfilment." Among other things, the classifications support the idea that older people need media literacy to promote democracy, inclusion, and societal dialogue as well as highlight the aspect of lifelong learning, which is why learning opportunities should be available throughout an individual's life cycle, from the early years to the end of life (see, e.g., Findsen & Formosa, 2011; Glendenning, 2000). Moreover, prevention of the risk of loneliness and exclusion can also be added to the list (Petranova, 2013; see also Zaccaria et al., 2021). Previous empirical studies also show that with increased media literacy in older people, effects have been observed in increased self-efficacy, self-esteem, and confidence as users of digital technology and media (see, e.g., Blažun, 2013; Gatti et al., 2017; Shapira et al., 2007), which further underscore the importance of and need for media literacy in older people's lives.

The previous empirical research shows that media literacy in older people varies between the two extremes and that needs are found in every dimension of media literacy (use, understand, create) (Rasi et al., 2016). For instance, according to Helsper and Reisdorf (2016) and Olsson et al. (2019), older people (aged 65+) with the following characteristics tend to have lower media literacy: poor health status, a relatively low level of education, social isolation, being older in chronological

age, and living in sparsely populated areas. Nevertheless, it is good to note that chronological age does not directly explain an individual's use of digital technology and media although it differs to some extent from that of the younger generations in terms of what digital technologies and media are used, how they are used, and on what devices (Bussolo et al., 2015; Hyppönen & Aalto, 2019; OSF, 2020; Rasi et al., 2016). Ofcom's (2020) report also supports this claim that Internet users over the age of 65 differ from younger ones in terms of Internet and social media use. For instance, 39% of those aged 65–74 and 21% of people over 75 have a social media profile, while compared to those aged 16–24, the readings are significantly different, with the corresponding number of young people being 95%. The number of people who do not use the Internet at all is more in the higher age groups (Ofcom, 2020). On closer inspection, the use of the Internet by older people has increased slightly in Finland, which may be due to changes in communication, such as caused by COVID-19, but is still lower compared to the younger generations (OSF, 2020). As stated earlier, age is not the main explanation for the use of digital technology and media although higher age is related with self-assessed skills level (Hyppönen & Aalto, 2019). According to Hyppönen and Aalto (2019, p. 156): "By far the strongest predictor of use of e-services was digital literacy: the more proficiency respondents had, the higher was the odds for using e-services." Furthermore, the amount of use has a more significant impact on learning to use digital technologies and media than chronological age (see, e.g., Bussolo et al., 2015; Digi Arkeen Advisory Board, 2021).

Previous empirical research has shown that older people are more inexperienced in digital technologies and media use than younger generations (Olson et al., 2011; Van Volkom et al., 2014). Inexperience may occur, for example, with touch screens (e.g., tablets, smartphones), with which older people do not have as much experience as younger ones (Van Volkom et al., 2014). Variations in media literacy or inexperience in the use of digital technology and media may be due in part to the fact that older people's abilities have not developed over the course of their own school years and a working life, which has been very different in time from that of today. The use of digital technologies and media is also seen to be affected by chronic conditions that increase with age (Czaja & Sharit, 2013). A poor state of health may lead to reduced use of the digital technology and media (see, e.g., Digital and Population Data Services Agency, 2020). Alternatively, according to the Ofcom's (2019) report, older people may be homebound due to poor health, for example, thus increasing the time spent at home, which in turn can increase dependence on digital technology and media. Dependence on digital technology and media can arise from so-called practical benefits (e.g., online shopping) and entertainment (e.g., watching TV) (Ofcom, 2019). However, the traditional forms of media, such as TV and radio as well as newspapers, are the most popular forms for the aging population (Matikainen, 2015; Saarenmaa, 2020), and their use

becomes more homogenous with people's age (Taipale et al., 2021). Older people also seem to be interested in the means of communication as contact with family members is increasingly important (e.g., Facetime) (Ofcom, 2019). Long distances and living in remote villages can also "force" older people to take care of their affairs online as it may no longer be possible to take care of things face to face as in-person services decline (see Kilpeläinen, 2016). The use of digital technology, for example in healthcare and in-home monitoring, has also become more widespread, and older people can thus be considered as one large consumer group (Czaja & Sharit, 2013; Gatti et al., 2017; Kauppila et al., 2017). This change and development, in turn, highlights e-health and health literacies, which also vary among older people (see, e.g., Airola et al., 2020; Eronen et al., 2019; Xie, 2011).

In the media, older people are often portrayed as a burden or otherwise in a negative light (see, e.g., Bai, 2014; Glendenning et al., 2000; Kelly et al., 2016), especially when it comes to the use of different digital technologies and media. Such representation does not in any way facilitate the situation of older people as users of digital technology and media, and it may also negatively affect their own thoughts, such as their ability to adopt digital technology and media in their daily lives (Rasi, 2020). In fact, previous studies have found that older people's own attitudes and emotions can influence the use of digital media and technologies. According to Umemuro (2004), if older people's own attitudes toward a device (e.g., computer) are positive, it may promote the use of the device in the future. In contrast, older people may be more frustrated than young people when using digital technologies, and they may find, for example, websites and cell phones challenging (not user-friendly) (Van Volkom et al., 2014), which in turn may negatively affect their use. This may also be due to the fact that devices (e.g., smartphones) may not be designed in an age-sensitive way, such as taking proper account of the physical and cognitive challenges posed by the age of older people (see, e.g., Hwangbo et al., 2013). However, there are some smartphones designed for older people that may be marketed, for example, because of their ease of use (e.g., Doro). Within the framework of the external features of these smartphones, the special needs of older people may have been considered (e.g., larger keys and screen size), but they should also be considered for applications and other features. Perhaps partly for this reason, some smartphones for older people may lack certain features or applications that can be found in mainstream smartphones. We must also remember that the lack of standardized training can also be a barrier to the use of smartphones by older people (see, e.g., Harte et al., 2018; Parker et al., 2013). So, from what we have read before and in the light of these examples, it must once again be said that older people comprise a large number of people that also form a large group of consumers who should be better considered in the design of equipment, applications, and related training (see also Röyskö, 2016) as currently only a few such studies can be found (Hwangbo et al., 2013).

Older people are easily understood through their chronological age and the challenges it brings (i.e., in a negative light), so it would be useful to be aware of the positive changes that have taken place over the years and increase this positive representation about them. For example, Cornér's (2020) study states that older people can often be stereotyped as sub-respondents when it comes to digital media use, but his study shows that not all older people can be generalized in this way and that features of wisdom may be found in their media relations, such as openness to new knowledge, social adaptability, as well as experience and its utilization. A recent study also shows that older Finnish people aged 75–80 are in a significantly better state of function (e.g., memory) than their peers three decades ago (see Koivunen et al., 2020; Munukka et al., 2020). Memory and cognitive skills are central to learning and sustaining something new, so based on the previous information, it can be thought that today's Finnish older people are in a better starting position for developing and maintaining media literacy than before.

As we have already seen from the previous text in terms of media literacy for older people, we have a tendency to be interested in their *use* of digital technology and media. Previous empirical research also seems to focus more on this dimension than on *understanding* and *creating* media texts and content (Age UK, 2016; Aufderheide, 1993; Castro Rojas, 2018; Digital and Population Data Services Agency, 2020; Ofcom, 2020; Rasi & Kilpeläinen, 2015; Rasi et al., 2016). This may be due to the fact that the use of digital technology and media is invested in by the government and public institutions, and acquiring equipment is easier than, for example, developing critical understanding. This is interesting because, according to Abad Alcalá (2019), the core of media literacy should instead lie in critical thinking. Nevertheless, it can be concluded that more needs to be done to support and develop the understanding of older people, especially as the media is today one of the most influential political, economic, cultural, and social institutions (Abad Alcalá, 2019). Research and practical work should also be strengthened in the field of creation, which is similarly not well represented based on the previous research literature.

Overall, a closer look at older people and their use of digital technology and media suggests that the issue is complex and multidimensional. Older people seem to be a very heterogeneous group of people in this respect, where not only chronological age but also other aspects such as biological, psychological, and social aspects need to be considered (Czaja & Sharit, 2013; Findsen & Formosa, 2011, 2016; Laslett, 1996). This is an important consideration for the development of media literacy geragogy.

2.3 Media Literacy and Geragogy

The previous section discussed older people's media literacy generally, while this section focuses more specifically on how media literacy in older people could be guided and developed—that is, what kind of methods, pedagogy, and practices could be used to promote older people's media literacy. At the same time, this is the main problem of the present study, and previous empirical research shows that relatively little is still known about the topic. However, the solution can be sought through the theory of *geragogy*, which gained popularity after appearing in Jacques Lebel's (1978) article in *Lifelong Learning: The Adult Years*, referring to the management of teaching and learning older people (see also Findsen & Formosa, 2011; Formosa, 2012). Lebel declared that older people need their own and separate educational theory. Later, others (e.g., John, 1983, 1988) developed their own notions of geragogy; for instance, John (1988, p. 13) defined geragogy as follows: "The term geragogy deals with the unique instructional considerations that related to teaching the elderly," which seems to be a "top-to-bottom" approach to older people's learning, emphasizing the role of the teacher in the learning process (see also Findsen & Formosa, 2011). According to Creech and Hallam (2015, p. 45), this kind of approach specified "teaching strategies and particular learning tasks that were deemed to stimulate older adults," which garnered criticism, inter alia, by homogenizing and infantilizing older people (see also Findsen & Formosa, 2011). These allegations are justified as the literature of that time describes older people (for example) as follows: "The elderly described in this book are not really completely independent, nor are their goals clear and directly motivating" (John, 1988, p. 13). Moreover, not much of the literature at the time seemed to focus on the potential negative effects of learning on older people and was mainly interested in certain types of older people (e.g., healthy, middle-class, higher educated), which can be considered as inadequacies and limitations of the literature of that time (Formosa, 2012).

In the present study, geragogy is not understood as a new theory of how older people should be guided and taught but rather as a fine-tuning of guidance and teaching in relation to the needs of older people. Support for this perspective can also be obtained through Findsen and Formosa's (2011, p. 103) definition of geragogy, which "refers to the need to fine-tune adult learning teaching and instructional styles to aid the learning experiences of older adults who are generally post-work and post-family, and sometimes frail and with intellectual limitations." However, as already mentioned in section 2.1 Defining the Concept of "Older People," older people are not seen as a homogeneous group of people, such as through certain stereotypes and roles (e.g., post-work, post-family), but rather as a diverse group of people, some of whom may still be in employment even if the criterion for retirement has been met in terms of age. Nor does this study need to focus only on certain types of older people,

such as older people who are in a better socio-economic position, or to assume that all education automatically improves the quality of life of older people (see, e.g., Formosa, 2012). In order for education to have positive benefits in the lives of older people, according to geragogy, the instructor must tailor their instructional plans accordingly and in general be sensitive to the diverse and unique characteristics of older people (Findsen & Formosa, 2011). For this reason, "one should not expect from geragogy some comprehensive educational theory for older adult learners, but only an awareness of and sensitivity towards gerontological issues" (Findsen & Formosa, 2011, p. 105).

According to David James (2000, p. ix): "Learning is a fundamental biological and psychological process" that occurs throughout human life (Formosa, 2012) and that is divided into three groups based on age. Geragogy, which settles between educational sciences and gerontology, is a separate field in the educational sense from teaching for children and young people (*pedagogy*) or for adults (*andragogy*) by focusing specifically only on teaching for older people (Findsen & Formosa, 2011; von Doetinchem de Rande, 2020). However, according to Findsen and Formosa (2011), the theory of geragogy has its roots in andragogy, where the learner is seen to be self-directed and independent (see also Glendenning, 2000). The past experiences of adults and older people are an important part of learning as, based on earlier experiences, new knowledge is built on the things they want to learn. Therefore, teaching often involves a lot of discussion and problem solving, and "The goal of the educator is not only to transfer knowledge but also to urge the learner to search for knowledge himself" (Giannoukos et al., 2015, p. 247; see also Findsen & Formosa, 2011). In fact, in adult education, teaching can be described rather as guidance, where the role of the teacher changes more to the role of the instructor. Learning is also motivated more by internal (e.g., quality of life, self-esteem) than external factors compared, for example, to children (Findsen & Formosa, 2011). In these respects, there are many commonalities between andragogy and geragogy, but they cannot be fully equated with each other. According to pedagogy, andragogy, and geragogy, teaching should be adapted to the needs of different age groups, and they should be seen as "interrelated and overlapping fields, as a set of assumptions and guidelines about human learning in different phases of the life course" (Findsen & Formosa, 2011, p. 105).

The difference between andragogy and geragogy can be seen in the fact that older people in geragogy are thought to be qualitatively different from adults, such as mentally and physically, and also their situational circumstances and experiences are different (see, e.g., Findsen & Formosa, 2011; Formosa, 2012). Learning and teaching in older people are significantly affected by their health and cognitive abilities and, more specifically, by the plasticity of the brain. Brain plasticity and cognitive resources, such as perceptual speed and memory, decrease with age and thus may negatively affect learning outcomes (see, e.g., Czaja & Sharit, 2013; Findsen

& Formosa, 2011; Park & Bischof, 2013). For instance, the consolidation or transfer of learned knowledge to long-term memory slows as an individual ages (Czaja & Sharit, 2013), and multitasking, or performing multiple tasks simultaneously, has also been seen to become more difficult as we age (Findsen & Formosa, 2011). On a larger scale, a decline in these abilities may also limit an individual's independence and quality of life (Bárrios et al., 2013). Despite these examples, as Luppi (2009, p. 243) writes in her article: "there is not an optimum or peak age for learning, that is, there is not any one age period that affects an individual's development more than the others," so there should be no doubt that that older people can learn at a later age (see also Brink, 2017; Findsen & Formosa, 2011). In fact, recent empirical studies have shown that brain plasticity can be influenced until old age (see, e.g., Park & Bischof, 2013; Happel & Frischknecht, 2016; Schmidt et al., 2020). This is an important note because learning plays a key role precisely in terms of independence and keeping the mind active, but it also has a significant impact on saving government money, for instance (Boulton-Lewis et al., 2006).

Although the roots of geragogy are strongly associated with andragogy, its spectrum extends beyond, meaning that geragogy is not the only concept that describes the teaching and learning of older people but that other concepts such as *eldergogy* and *gerontagogy* have been used alongside it (see, e.g., Boulanger et al., 2020; Findsen & Formosa, 2011; Formosa, 2002; Glendenning, 2000; Kern, 2014; Maderer & Skiba, 2006). In fact, geragogy, eldergogy, and gerontagogy can sometimes even be used synonymously (von Doetinchem de Rande, 2020), but on the basis of the previous literature, some nuances can still be distinguished that show differences between the different concepts (see also Findsen & Formosa, 2011; Formosa, 2002; 2012). For example, the term eldergogy, promoted by Yeo (1982), is not used in the present study because no educational theory was developed for the concept (see also Findsen & Formosa, 2011). Also, gerontagogy, which is "a new hybrid science resulting from the prolific combination of educational gerontology—multidisciplinary specialization in itself—and education of aging" (Lemieux & Martinez, 2000, p. 482), has not been used in this study (see also Findsen & Formosa, 2011). An attempt is made to distinguish the concept from geragogy by defining geragogy more as the teaching and guidance of older people presenting deficits and gerontagogy as the teaching and guidance of older people without deficits (Kern, 2014; see also Lemieux & Martinez, 2000). In the present study, older people are understood as a heterogeneous group of people and not through "deficits" or a "lack of deficits." Moreover, the concept can be characterized as a dual model, which also adds a distinction to the concept of geragogy (Lemieux & Martine, 2000; see also Kern, 2014).

According to von Doetinchem de Rande (2020, p. 67) "Another sub-discipline is the so-called critical geragogy or critical educational gerontology," which also describes well the spectrum of the field and can be thought to have evolved after the theorists of geragogy had infantilized older people with the goal of responding

to this issue by liberating older people and empowering them (see also, Findsen & Formosa, 2011; Formosa, 2002; 2012; Glendenning & Battersby, 1990; Maderer & Skiba, 2006; von Doetinchem de Rande, 2020). Indications of *critical gerogogy* can also be found although only a little has been published in relation to this or in general on *gerogogy* (Formosa, 2002). Critical gerogogy also includes the critical perspective, in particular in terms of societal issues, their critique, and the pursuit of change (e.g., ageist world) (Formosa, 2002). This can also be seen to have a connection to critical educational gerontology, as Formosa (2002, p. 83) states in his article that "This discussion has attempted to propose a set of principles for the practice of critical gerogogy in the hope that they act as a catalyst for the achievement of the goals of critical educational gerontology." Overall, the critical nature and the idea that education is not a neutral enterprise distinguishes the concepts from geragogy (see also Glendenning & Battersby, 1990). From this point of view (i.e., the critical perspective), this is not the main aim of the present study, and the concept of geragogy is used in the present study because it has a long history, is already well-established, and can be considered equivalent to pedagogy, making it well-suited to the main goal of this study (expand the media literacy pedagogy to the aging population) (Findsen & Formosa, 2011). According to Maderer and Skiba (2006), Mieskes (1974), for example, has already noted a strong connection between pedagogy and geragogy, in addition to which its roots also extend to andragogy (see also Findsen & Formosa, 2011).

The development of media literacy in older people can also be approached in part through *media literacy pedagogy*, which is widely used in media education (see, e.g., Westbrook, 2011). According to Westbrook (2011, p. 156): "media literacy pedagogy can be defined as problem-posing and constructivist teaching that nurtures learning to identify, evaluate, and analyze codes and conventions of typographic and post-typographic mediated texts." Media literacy pedagogy is also essentially related to production and practical work with media, where the learner actively builds meanings through discussion, analysis, reflective practice, and inquiry (see also Westbrook, 2011). In media literacy pedagogy, as with adult education, educators do not directly transmit information to the learners but rather facilitate it, such as by discussing and asking questions and drawing on past experience (see also Findsen & Formosa, 2011; Giannoukos et al., 2015; Westbrook, 2011). Media literacy pedagogy is also influenced by how the concept of media literacy is understood, and it seeks to correspond to how the teaching of media literacy should be implemented (see also Westbrook, 2011). However, it does not sufficiently consider the specificities of older people, and the concept is viewed largely in the context of the school world, which is why developing the content of the concept for the media literacy geragogy is needed.

In light of previous knowledge, it is erroneous to assume that media literacy in older people can be developed and guided by exactly the same pedagogical

perspectives and basic principles as, for example, children and young people as they differ slightly (see also Rasi et al., 2019). Media education for children and young people is already governed by a number of laws and study guides that clearly define the aims of education. An example of this is the law on the goals of early childhood education (3§), which stipulates that all education (including media education) must support the child's holistic growth and play, for example. The Finnish National Agency for Education also recommends the use of child-oriented pedagogy in its media education, in which pupils will be heard, and their participation will be emphasized (see also Salomaa & Palsa, 2019). The situation is not the same for older people as media education is considered to be based on older people's own needs and interests while supporting their cognitive skills (see, e.g., Castro Rojas et al., 2018; Rasi et al., 2019; Vaportzis et al., 2017). Nor are there as of yet very precise guidelines or laws for media education for older people although general guidelines for media education can be applied (see Salomaa & Palsa, 2019).

According to geragogy, several aspects need to be considered when developing media literacy in older people, such as the fact that they undoubtedly have a longer life experience than younger generations and that their life roles can change more radically with age (e.g., pensioner, widow, grandparent) (see also Vidovićová, 2018). Different life roles and the general course of life have a significant effect on, for example, learning goals (Kinnari, 2020) as interests and needs change with age (Rasi et al., 2019). The diversity of older people also plays a key role in guiding media literacy, which is compounded by health issues in particular but also by aging, education, and language (Czaja & Sharit, 2013). It is quite logical that learning becomes more challenging if older people are immigrants and do not yet know the language or culture of their country of residence very well (see, e.g., Laiho, 2018; Röyskö, 2016), and according to Cerna et al. (2020, p. 3): "Language barriers due to technical and/or English terms can make it difficult to use digital tools" (see also Müller et al., 2015). Previously acquired knowledge and experience, especially in terms of media literacy as well as social factors, can also influence teaching and learning (see also Czaja & Sharit, 2013). In fact, learning to use digital technologies and media for older people is more affected by the amount of use than chronological age (see, e.g., Bussolo et al., 2015; Digi Arkeen Advisory Board, 2021). According to Findsen and Formosa (2011), older people are also not equal in terms of their demographic background (e.g., ethnicity, gender, age), and these differences speak in favor of the fact that the same principles do not apply to everyone but can, in the worst case, create inequality in some respects (see also Hobbs, 2010). Therefore, it is important to understand that a "one-size-fits-all" program is not suitable for everyone (Hobbs, 2010, p. 20). This is understood in the present study to mean that media literacy cannot generally be implemented in exactly the same way for different age groups but also not for all older people within its large and diverse group of people.

Media literacy can be developed through an individual's own experimentation and continuous self-development, but it can also be organized in a structured way, such as in primary schools and universities (see also Pekkala, 2016; Salomaa & Palsa, 2019). Regardless of the context in which the media literacy of older people is developed, previous empirical studies clearly show that media education for older people must "take into account the personal and social peculiarities of this section of the population" (Abad Alcalá, 2019, p. 764) and be tailored to their own needs and interests (Rasi et al., 2016; Vroman et al., 2015). For instance, learning related to the everyday needs and interests of older people, such as adopting particular applications and devices in their lives (e.g., keeping in touch with family and friends, e-banking), was identified in several studies as one of the most important starting points for media education (see, e.g., Castro Rojas, 2018; Ivana & Fernández-Ardèvolb, 2017; Patrício & Osório, 2016; Sayago et al., 2013; Tambaum, 2017; Vroman et al., 2015). However, as Czaja and Sharit (2013, p. 2) point out: "Unfortunately, because of prevailing stereotypes about aging (you can't teach an old dog new tricks), older adults are often bypassed with respect to training opportunities or are offered training programs that are not tailored to meet their preferences and needs." Nevertheless, in guiding and developing media literacy for older people, there must be a causal link between the set learning goals and the results achieved (Abad Alcalá, 2019). It is also important to pay attention to the session forms (e.g., workshops, individual training sessions, informal education from family), duration (e.g., per session, frequency), and evaluation (Czaja & Sharit, 2013) in developing older people's media literacy. According to Abad Alcalá (2019, p. 765): "educational materials must be clear structured, gradually increasing in complexity without providing too much information in each session," which also support the cognitive skills of older people. Older people also like to learn through social interaction, especially if their skill levels are the same, but in this respect, group sizes should not be too large, and small groups are preferable (Abad Alcalá, 2019; Czaja & Sharit, 2013; Xie & Bugg, 2009).

There must be a certain degree of sensitivity in media education for older people because there can be a long period of time between when older people last studied or, due to prevailing stereotypes, their own interest, motivation, or desire to learn media literacy may not be high. According to Abad Alcalá (2019, p. 765): "the initial stage must involve positive and successful experiences to promote commitment and avoid frustration and abandonment." The atmosphere must be positive and respectful, which is substantially influenced by the instructor and their ability to provide the learner with a safe atmosphere (see, e.g., Castro Rojas, 2018). Attention should also be paid to the instructor's empathy with and ability to encourage older people, to avoiding the use of technical jargon in guidance (Abad Alcalá, 2019), and to the characteristics of a "warm expert" (Barrantes Cáceres & Cozzubo Chaparro, 2019; Hänninen et al., 2021; Olsson & Viscovi, 2018). A child, grandchild, or other non-

professional person is usually considered a warm expert who can help older people to use their devices (Olsson & Viscovi, 2018). Other older people can also be warm experts to each other (Hänninen et al., 2021), which (i.e., peer teaching) has been considered a successful way of learning as it is learner-centered and beneficial to both the provider and the recipient (see, e.g., Findsen & Formosa, 2011; Formosa, 2012; Xie, 2007). According to Olsson and Viscovi (2018, p. 335): "warm experts are important, regardless of an individual's skill level and technical literacy. Lasting relationships with warm experts provide stability in daily use technical difficulties can be solved and new things learned. In addition, they contribute to a feeling of safety." Warm experts not only help with the use of devices but also help to identify potential needs related to them (Olsson & Viscovi, 2018). Although this suggests that older people's media literacy can be guided by non-professional instructors such as peers, younger generations, and relatives, it is good to remember that many associations or, for example, libraries (i.e., by professionals) play an important role in promoting older people's media literacy (Castro Rojas, 2018; Gall, 2014; Kim & Merriam, 2010; Olsson & Viscovi, 2018; Tambaum, 2017; Xie & Bugg, 2009).

At this point in the chapter, it can be concluded that the media literacy of older people has not been studied much to date although interest in the field has grown (Petranova, 2013; Rasi et al., 2016). In general, there are some studies on media literacy and education in older people, but a proper combination of these is not yet available. However, a study resembling the present one can be found in the very recent past. A DBR study was carried out by Castro Rojas (2018) with the aim to "identify and understand key elements that might be included in designing suitable learning interventions for enabling older adults using information and communication technologies (ICT) (i.e., computers, mobile devices and applications) for enhancing cognitive activity, increasing social interaction, and promoting successful and active aging" (Castro Rojas, 2018, p. 5). The study resulted in a total of 11 design principles, as follows (Castro Rojas, 2018, pp. 129–130): 1) *Organize the learning activities around interesting topics for older adults*; 2) *Encourage individual participation, and support a collaborative learning environment*; 3) *Support social interaction and social networking*; 4) *Facilitate spaces to explore, and reflect on emotions and stereotypes related to learning about and using ICTs as older learners*; 5) *Offer a sustained support system*; 6) *Provide resources to support declining cognitive abilities*; 7) *Develop a broad perspective concerning ICTs and how to match them to personal interests and needs*; 8) *Provide a safe learning environment in which participants' experiences and knowledge are respected*; 9) *Identify and include suitable strategies for social support from family and friends for assisting older adults' ICT-learning*; 10) *Promote autonomy and independence in using ICT*; and 11) *Define a facilitator profile.*

The results and design principles of the Castro Rojas (2018) study are relevant and support the design principles of the present dissertation; however, her study focuses mainly on only one dimension of media literacy (use) and does not address

media literacy in its broader sense, as is done in this study. Also, the aims of the studies differ. In the present study, the aim is to develop older people's media literacy geragogy, while Castro Rojas's study aims to enhance older people's cognitive activity and promote successful and active aging as well as increase social interaction by using ICT. The aims are addressed in both studies by means of the DBR approach, but differences can be found in the data collection methods and the participants of the sub-studies. For example, in Castro Rojas's study, the minimum age limit for the participants was 60 years, and there were other criteria to participate in the study, such as capability to read and write, whereas in the present study, the only criterion was the age limit of 65 years or older. However, in the first sub-study, we were unable to fully adhere to this age limit with the other authors of sub-study I (more in Chapter 4). Moreover, interviews with two professionals who teach older people to use ICT were conducted in her study. In the present study, interviews were not used as a data collection method, and in addition to professionals, the study also included teacher students from the University of Lapland. Castro Rojas's study is located elsewhere culturally and geographically than Finland (Costa Rica), and the context differs significantly by the fact that her research is not placed in teacher education, as this research is. For these reasons, the need for this study is justified as it focuses on developing the concept of media literacy geragogy and teacher education in a broader sense and in a context different from what has been done before.

3 RESEARCH QUESTIONS

The overall research question of this study is: *What kind of media literacy geragogy supports older people's media literacy?* The main research question and in general the topic of older people's media literacy geragogy has been approached through three separate sub-studies, each with their own methods, aims, and research questions. This dissertation utilizes the views of older people and professionals and also the perspectives of teacher students as well as the results of previous empirical research to develop the media literacy geragogy.

In the first sub-study, a systematic literature review, the aim was to become acquainted with previous research in the field and increase understanding on how to promote older people's media literacy. Therefore, the following four research questions were set:

1) What dimension of media literacy (use, understand, create) did the media literacy interventions target?
2) What kinds of pedagogical approaches were used to foster media literacy in older people?
3) What kinds of media literacy intervention outcomes were reported?
4) What kinds of practical implications for media education were reported?

On the basis of the first sub-study, the understanding on media literacy geragogy for older people was expanded in the second sub-study. The topic was explored through four participatory creative workshops directly for older people and professionals who work with them. The sub-study also examined older people's own perceptions of their level of media literacy. Thus, the following research questions have been answered from the perspective of the older people and stakeholders who participated in the workshops:

1) What are the levels of older people's media literacy?
2) What dimensions of older people's media literacy require training and support?
3) What kinds of pedagogical approaches are suitable for supporting older people's media literacy?

Based on the first two sub-studies, a course focusing on older people's media literacy was designed and piloted as part of the teachers' pedagogical studies at the University of Lapland during the academic year 2019–2020. The implementation of the course enabled the collection of research data from teacher students but also from older people and professionals. The following research questions posed in the third sub-study further developed and broadened the understanding of the media literacy geragogy and further developed the course:

1) On what dimension of media literacy did teacher students' designs focus?
2) What kind of pedagogical approaches were used in the students' designs to support the media education of older people?
3) What should media literacy interventions be like according to stakeholders' feedback?

4 RESEARCH METHODOLOGY

The present study has been conducted using a DBR approach consisting of a total of three qualitative and deductive sub-studies (Anderson & Shattuck, 2012; Design-Based Research Collective, 2003; Wang & Hannafin, 2005). The sub-studies were conducted and peer-reviewed in international scientific journals during the years 2018–2021 (see Table 1). The following chapter will present the sub-studies in more detail, particularly through the DBR method. Once the DBR method has been described in general and considered from the perspective of the present study, the overall research design will be presented in more detail.

Table 1. *Summary of the DBR design.*

Aims	Research Questions	Data Collection and Data	Data Analysis Methods	Publications
Sub-study I To increase the understanding of the promotion of media literacy in older people and to report on international practical research on media literacy in older people.	1) What dimension of media literacy (use, understand, create) did the media literacy interventions target? 2) What kinds of pedagogical approaches were used to foster media literacy in older people? 3) What kinds of media literacy intervention outcomes were reported? 4) What kinds of practical implications for media education were reported?	DBR approach Systematic literature review (n = 40)	Qualitative content analysis	Rasi, P., Vuojärvi, H., & Rivinen, S. (2021). Promoting media literacy among older people: A systematic review. *Adult Educational Quarterly, 71*(1), 37–54.

Sub-study II To find out the state of media literacy of older people and how media education for older people should be implemented in the opinion of older people and professionals.	1) What are the levels of older people's media literacy? 2) What dimensions of older people's media literacy require training and support? 3) What kinds of pedagogical approaches are suitable for supporting older people's media literacy?	DBR approach Media literacy intervention designs with older people (n = 16) and stakeholders (n = 16) as well as questionnaire with older people (n = 16)	Qualitative content analysis supported by a small quantitative survey	Rivinen, S. (2020). Media education for older people—Views of stakeholders. *Educational Gerontology, 46*(4), 195–206.
Sub-study III To develop Finnish teacher education and find out the views of teacher students on how media literacy intervention for older people should be implemented and to collect feedback from older people and professionals on the basis of teacher students' designs.	1) On what dimension of media literacy did teacher students' designs focus? 2) What kinds of pedagogical approaches were used in the students' designs to support the media education of older people? 3) What should media literacy interventions be like according to stakeholders' feedback?	DBR approach Teacher students' designs (n = 9) and presentations (n = 7) on older people's media intervention as well as written (n = 54) and oral (n = 54) feedback from older people and professionals	Qualitative content analysis	Rivinen, S., Rasi, P., Vuojärvi, H., & Purtilo-Nieminen, S. (in press). Teacher students' designing of media education for older people: Creative and needs-based pedagogies emphasized. *Seminar.net. International Journal of Media, Technology & Lifelong Learning*.

4.1 Design-based Research Approach

There is no single unambiguous definition for the design-based research (DBR) method although the DBR approach is typically used when the aim is to "improve educational practices through systematic, flexible, and iterative review, analysis, design, development, and implementation, based upon collaboration among researchers and practitioners in real-world settings, and leading to design principles or theories" (Wang & Hannafin, 2005, p. 2). In fact, the development of design principles is common in DBR particularly when it comes to both improving and developing practices and research in educational settings as well as generating new knowledge about it (Anderson & Shattuck, 2012), as aimed at in the present study. The DBR method is also used to explore and design pedagogical models and yield new theories in a specific context (see also Castro Rojas, 2018; Design-Based Research Collective, 2003; Edelson, 2002; Hickey, 2011; Kangas, 2010b; Keskitalo, 2015; Wang & Hannafin, 2005). The overall aim of the DBR method is to build a stronger connection between problems in the real world and research (Amiel & Reeves, 2008; Wang & Hannafin, 2005). This is possible, for example, by finding a

solution to a design problem (Andriessen, 2006; Edelson, 2002), which is also posed in this study and is as follows: *What kind of media literacy geragogy supports older people's media literacy?*

It is normal for a DBR study to aim to answer a set design problem, which may be a theoretical-level problem, in addition to which it simultaneously seeks to achieve another goal, which is a more practical-level goal. DBR is thus characterized by an effort to meet both a theoretical and a practical challenge, a dual goal (see Design-Based Research Collective, 2003; Rasi & Vuojärvi, 2018; Vuojärvi et al., 2019). For example, in the present study, the development of media literacy geragogy can be considered as both a theoretical-level goal and a practical-level goal for the development of teacher education. The aims as well as the close connection of theory and practice have therefore not been separated from each other but rather have supported each other's realization (Design-Based Research Collective, 2003; Wang & Hannafin, 2005). Through these aims and actions, this study responds to a real need where shortcomings in media literacy pedagogy and teachers' pedagogical studies have been identified with regard to the lack of content for older people (see also Wang & Hannafin, 2005). Moreover, there is also a general need for media literacy content in teacher education, the integration of which has been somewhat slow (see Meehan et al., 2015; Salomaa et al., 2017). Therefore, a research-based course on media literacy for older people has been developed and added to the studies.

The nature of DBR is strongly associated with cyclicity, where research and development are carried out through repetitive cycles (Design-Based Research Collective, 2003; Zheng, 2015). Generally, one such cycle involves a series of different phases, which, according to Cobb et al. (2003, pp. 11–12), are as follows: "developing an initial design, conducting the experiment, and carrying out a systematic retrospective analysis" (see also Design-Based Research Collective, 2003). When all the steps of the cycle have been completed, a new cycle then begins, repeating these same steps again. The number of cycles is not limited and can be performed as many times as needed. To illustrate the matter further, for example, the present study consists of the first cycle of the DBR study, repeating all of the above phases. The first cycle includes three separate sub-studies and the summary of the dissertation (see Figure 2), during which the following DBR phases have been performed: 1) designing the preliminary design principles and the content, goals, materials, and pedagogy for the new blended learning course; 2) piloting the new course in the teachers' pedagogical studies and collecting data; and 3) analyzing the data and refining the final design principles and the course on a research basis (Cobb et al., 2003; Design-Based Research Collective, 2003; Edelson, 2002; Wang & Hannafin, 2005).

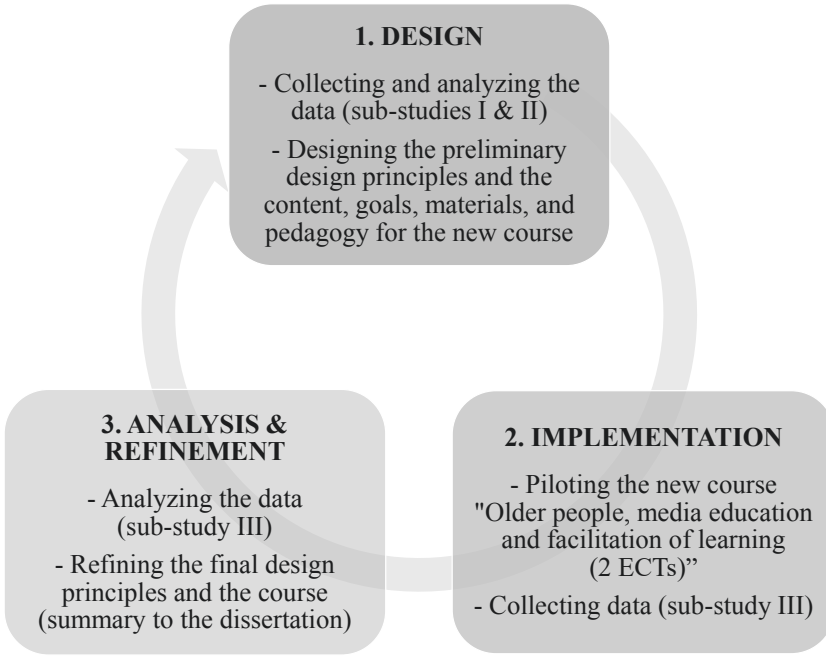

Figure 2. *The first cycle of DBR and its phases.*

To open up the different phases (design, implementation, analysis, and refinement) of the DBR cycle in more detail, the present study is used here as an example. In this study, the first phase of the cycle, the designing phase, started with a systematic literature review in 2018, when its authors examined media literacy interventions for older people on the basis of previous empirical studies (see Figure 2). The results of the literature review provided a preliminary basis for the design principles for media literacy geragogy, which were then refined and compiled through sub-studies II and III at the end of the present study. During the literature review, the second sub-study was launched, where the aim was to approach Finnish older people and stakeholders in order to increase understanding on the topic. Together, the first two sub-studies provided information for the development of preliminary design principles but also for the design of the new "Older People, Media Education, and Facilitation of Learning" course. In the next phase of the first cycle, the implementation phase, the new blended-learning course was piloted. During the course, when the third sub-study was also carried out, data were mainly collected from teacher students. The aim of the last sub-study was to obtain more knowledge on the topic with a new target group, teacher students who are studying pedagogy and who received training on the topic from a pilot course, as well as to gather information about the piloted course in order to develop it. In the last phase of the DBR study, the analysis and refinement phase, the research data collected from sub-study III were analyzed.

Furthermore, based on the results of all three sub-studies, it was possible to refine the final design principles and the course. The results of the first cycle are analyzed in the introductory part of the present dissertation in order to reach a higher theoretical level.

As we can already conclude from the previous text, in the DBR method, it is common to collect data through many different ways and methods (often mixed methods are preferred), which is why a great deal of material accumulates (Collins et al., 2004; Design-Based Research Collective, 2003; Wang & Hannafin, 2005; Zheng, 2015). The accumulation of a large body of research data is one of the characteristics and challenges of the implementation of DBR as managing large amounts of research data can sometimes be challenging and laborious (Collins et al., 2004; Dede, 2004). However, the fact that data are collected from several different sources in different ways increases the reliability of the DBR study when the research topic is not viewed from only a narrow perspective (see, e.g., Design-Based Research Collective, 2003). The data thus enable a more comprehensive and reliable picture of the topic under investigation, which should be seen as an enrichment rather than a challenge.

The DBR method is characterized by a close collaboration between the researchers and stakeholders or other practitioners who participate in the DBR process (Coburn & Penuel, 2016; Design-Based Research Collective, 2003; Wang & Hannafin, 2005). This is simultaneously a benefit but also a challenge of the method. Challenges can arise for even one intervention due to its complex circumstances or messy settings and when several actors are involved in the process (Design-Based Research Collective, 2003). This can be particularly challenging when there are multiple interventions and when participants are usually involved in all the different phases of the DBR (design, implementation, analysis) and not just some of them. However, the benefit here is that the practitioners work together to achieve meaningful change on a practical level (Design-Based Research Collective, 2003). This facilitates and at the same time complicates the researcher's work when maintaining several interpersonal relationships, but, alternatively, sharing responsibilities and consulting different perspectives helps to achieve results.

After the description of the DBR, it should also be considered from an epistemological and ontological perspective. First, epistemology raises questions about what and how a person can know about things and what information is correct, and second, ontology considers what things are true and what reality is. According to Barab and Squire (2004), DBR is used to find out and model people's way of thinking, knowing, learning, and acting. Information is gradually constructed from a series of approaches rather than through a single approach, which produces new theories, practices, and artifacts. These can be exploited and placed in its natural environment, which is central to the DBR approach in particular and which can have potential impacts on its natural environment (see also Barab & Squire, 2004). Thus, from the point of view of generating information, the strength and challenge of DBR

can be considered to be that it not only produces, for example, a specific model that is shown to work but also requires the researcher to produce up-to-date theoretical information based on the collected data (Barab & Squire, 2004). DBR can thus, at its best, allow for a scientific connection between theory and practice. Furthermore, in the DBR, information is produced in conjunction with social interactions with other actors and stakeholders (Barab & Squire, 2004). More specifically, information is produced socio-culturally so that the production of information that takes place in human interaction also considers historical and cultural dimensions (see, e.g., Mahn & John-Steiner, 2012). Therefore, the information studied is always placed culturally and historically in the specific context in which it has been studied. At the same time, this poses challenges for the researcher on how reliable research and theoretical knowledge, which could be utilized in multiple contexts, (s)he is able to do when (s)he participates in research as a researcher and situation producer. Further challenges are also posed by the need for the researcher to find a connection to theoretical claims that go beyond the local context (Barab & Squire, 2004).

Finally, it should be noted that, among other things, the close involvement of the participants in the research and the development of theory and local practice are also features of *action research,* which can often be confused with the DBR approach (see also; Kiviniemi, 2015; Stringer, 2014; Wang & Hannafin, 2005). According to Wang and Hannafin (2005), for example, in *participatory action research*, researchers only facilitate the interventions rather than being closely involved in the design and development of the interventions themselves, as is customary in DBR. Participatory action research usually starts with participants' own research (Wang & Hannafin, 2005). In the present study, the author, together with other researchers and the teachers in charge of the course, were primarily responsible for the design of the course, the development work, and the research, which involved older people, stakeholders, and teacher students. Also, as indicated earlier, the course design was only possible when the preliminary concept of media literacy geragogy had been developed, which in turn contributed to the implementation of the course and the research data collection for the further development of the theory and practice. According to Barab and Squire (2004, p. 5): "This focus on advancing theory grounded in naturalistic contexts sets design-based research apart from laboratory experiments or evaluation research." For these reasons, this study is not considered action research.

4.2 Overall Research Design

In order to achieve the theoretical and practical goals of the present DBR study, research questions were set at the beginning of each sub-study and have taken shape as to their final forms as the sub-studies progressed. To answer the set research questions, the research data were collected from a variety of sources

(empirical studies, older people, professionals, teacher students) and in different ways (systematic literature review, case exercise, questionnaire, written assignment, presentation, written and oral feedback) (see Table 2). As a result of the research data collection, a total of 40 empirical studies were included, and 60 participants (16 older people, 22 professionals, 22 teacher students) took part in the present study. It is noteworthy that the older people and some of the professionals in sub-studies II and III were the same, with some exceptions.

Table 2. *Overall research design.*

	Sub-study I	**Sub-study II**	**Sub-study III**
Participants	N/A	31 participants (16 older people, 15 professionals).	37 participants (22 teacher students, 4 older people, 11 professionals).
Research situation	Empirical articles describing some media literacy interventions were searched, selected, and analyzed.	Participants designed an ideal media literacy training program for older people in pairs; older people filled out a questionnaire.	Teacher students designed and presented a design for older people's media literacy intervention; stakeholders provided written and oral feedback.
Role of the researcher(s)	Researchers collected, reviewed, tabulated, and analyzed the data first separately, then together in a four-day workshop.	Researcher designed and carried out the workshops and collected the data in collaboration with another researcher; researcher analyzed the data alone.	Researchers collected and analyzed the research data together.
Role of the participants and data	Empirical studies served as research data for conducting a literature review.	Participants took an active role in the exercises and discussion in the workshops.	Students produced designs and presentations for the workshop, where all participants actively participated in the group work and discussion.
Data collection	Three-stage data collection from online and international databases.	Four creative participatory workshops.	Piloted course.
Data	Empirical studies (n = 40).	Questionnaire (n = 16), transcriptions of case exercise (n = 16).	Written assignments (n = 9), presentations (n = 7), written feedback papers (n = 54); transcribed feedback (4,288 words).
Data analysis methods	Qualitative content analysis method using NVivo 12.	Qualitative content analysis method using NVivo 12.	Qualitative content analysis method using NVivo 12.

The research data of the present study is mainly qualitative although in sub-study II the data collection was supplemented in a quantitative way by using a questionnaire for the older people. However, the present study is not actually a mixed-methods

study but a qualitative and deductive DBR study that has only been supplemented with a small amount of quantitative data. The analysis through sub-studies I–III has been deductive and strongly based on the previous literature and the traditional concept of media literacy (Aufderheide, 1993; see also Ofcom, 2020). Based on the definition of the concept, three dimensions have been defined—*use*, *understand*, and *create*—according to which the outcomes of media literacy have been measured (see Ptaszek, 2019). The research data have been analyzed for the most part in collaboration with the other authors of the sub-studies except in sub-study II, which I conducted alone. Sub-studies I and III were conducted in collaboration with a total of three to four authors (including me). The research results are thus more accurate, and possible errors are more likely to be avoided. The data of each sub-study was coded using the NVivo 12 software, where it is important to note that the coded units could be coded into more than one code category. The data are firsthand data.

As a result of sub-studies I–III, the media literacy geragogy was developed together with the concepts of media literacy and geragogy and the understanding of the concept of "older people," which resulted in a total of eight design principles and a course called "Older People, Media Education, and Facilitation of Learning." The following subsections provide more detailed information on the data and participants and the data collection and analysis processes as well as summaries and analyses of the results of each sub-study.

4.3 Sub-study I: Promoting Media Literacy among Older People: A Systematic Review

4.3.1 Data and Participants

The research data of the first sub-study consisted of 40 previous empirical studies, more specifically 18 quantitative, 11 qualitative, and 11 mixed-methods studies that addressed some media literacy interventions involving older people. In this sub-study, older people were defined as 60 years of age or older (e.g., Peace et al., 2007) in contrast to the actual dissertation, which chronologically define older people as 65 years and above (Eurostat, 2019; WHO, 2011). The lower age limit was due to the fact that the literature review sought a greater amount of research data and a more extensive understanding of the issue. Moreover, the data collection for the literature review had already started in 2016 with this restriction—that is, before the actual start of the dissertation process—and it was no longer necessary to change it in the middle of the process. It was also not intended to keep the age limit at 60 throughout the dissertation as most of the literature commonly defines older people as 65 years of age or older (see, e.g., Lee et al., 2018; Ofcom, 2020). Despite the age limit, I, together with the other authors, could not fully influence the sample of study participants, which is why the target group may also include those under 60

years of age. The youngest could be in their 40s, although most were over 60 years old: "In most of these 36 articles, either the minimum age (n = 10) or the mean age (n = 11) of the participants was older than 60 years. However, in 15 articles, some of the youngest participants were in their 50s or, in two articles, their 40s, while the majority were older than 60 years" (Rasi et al., 2021, p. 41).

The exact number of participants varies from study to study and was reported either quantitatively, as a percentage, or not at all (see sub-study I for more details). Most of the participants were female, and participants were reported to come from a total of 17 different countries although most media literacy interventions targeted the United States (n = 15). The next largest number of media literacy interventions were reported to come from Spain (n = 6) and the United Kingdom (n = 4). The remaining 14 countries—Italy, Canada, Taiwan, China, Czech Republic, Estonia, Finland, Hong Kong, Israel, Malaysia, Portugal, Slovenia, South Korea, and Thailand—reported only one or two media literacy interventions. Moreover, interventions were organized mostly by collaborative projects (n = 16) and universities (n = 12). Interventions were organized to a lesser extent by community colleges, senior clubs or centers, research institutes, projects, elderly homes, or social services, and the organizer was not identified at all in two studies.

4.3.2 Data Collection and Analysis Processes

The data were collected in three separate stages over the period 2016–2019. The first stage was conducted in August 2016, the second in the spring of 2019, and the third complementary stage in March–June 2019, of which I contributed in the last two stages. Two other authors, the first and the second authors of sub-study I, had carried out the first stage of the data collection in 2016. They were also responsible for reviewing, tabulating, and conducting the preliminary coding of the data in the NVivo software, which occurred during 2016–2019. My responsibility was to conduct the second stage of the data collection, which was implemented based on the first stage of the search. The responsibilities also included reviewing, tabulating, and conducting preliminary coding in NVivo. The third stage was carried out as a complementary stage on the basis of the results of the first two stages. The complementary stage was carried out together with all the authors so that everyone participated equally in all stages of the work in 2019.

The last two stages were performed on the basis of the first stage, but for the second and third stages, changes had to be made to the search phrases due to technical changes in the database search settings. It was my responsibility to make these changes in collaboration with the university's library information specialist. The keywords and databases remained, however, the same in content. Overall, all searches at every stage were conducted on the following online international databases: Academic Search Elite (Ebsco), ERIC—Education Collection (ProQuest), SAGE Journals, and ScienceDirect (Elsevier). The AgeLine database was added only to the

second- and third-stage searches. The addition of the database was due to a change in the databases over the years as previously it had not been possible to include AgeLine; the addition was made with the hope that the search result would be more comprehensive. In turn, the keywords used different synonyms for the term *older people* combined with other relevant keywords such as *media literacy* (more specific keywords are listed in sub-study I). After three stages of searching, a total of 2,338 articles were found. These articles were reviewed according to the following criteria, and irrelevant articles (e.g., duplicates) were removed: English language, published in a peer-reviewed scientific journal between January 2005 and April 2019, and reporting on media literacy interventions for older people. In the end, 40 empirical articles were selected for the literature review.

The process of selecting and analyzing the relevant articles was carried out collaboratively so that the articles from the two first stages were first distributed among the three authors, who went through the articles initially. After that, the articles were jointly reviewed and coded in a four-day evaluation workshop in spring 2019, during which all articles were coded into NVivo. All of the three authors participated. During the first workshops, where only the results of the first and second stages were reviewed, the authors recognized that a third complementary stage of data collection was needed. To broaden the list of search phrases, the last stage of data collection was implemented together by the authors. Articles in this stage were reviewed together in the workshop, and the selected articles were shared between the three authors for a closer examination. The authors conducted the preliminary coding, after which the full-text articles were coded together in the last workshop. The following categories of articles were coded and further analyzed: participant information (number, age, gender), country, media literacy intervention provider and venue, bibliographical information, dimension of media literacy (use, understand, create), and pedagogical approaches as well as the goals and outcomes of the reported intervention.

The first sub-study was written and submitted to an academic journal in 2019. Before this, the order of the authors had been discussed and responsibilities were shared. The first author of the article acted as the corresponding author. My duties included writing the outcomes and implications for the Results section as well as writing the Methods section together with the other two authors. The first author wrote the Introduction section, the Dimensions of Media Literacy part of the Results section, and the Discussion section. The second author was responsible for writing the Pedagogical Approaches part in the Results section. The article was first published online in 2020.

4.3.3 Summary and Evaluation of the Results of the Sub-study

Based on a literature review, only 40 empirical studies of media literacy interventions in older people were found. The number of previous studies is relatively low,

especially when media literacy is understood as the ability to *use*, *create*, and *understand* different media content and texts (Aufderheide, 1993; see also Ofcom, 2020), but large enough to conduct a literature review. What is noteworthy here, however, is that the search result was obtained with a lower age definition for older people (60 years and above), and it would be interesting to know what the result would have been with a higher age limit (65 years and above). Most likely, the result would be even lower than what it is now. A small number of qualified studies can be considered an important outcome in itself, indicating that research on media literacy in older people is not yet sufficiently available and that more is needed. This also serves as a justification for conducting this literature review, which at the same time fills a gap in the field of research to some extent.

A closer analysis of the selected studies showed that most of the media literacy interventions focused on older people's *use* of digital technologies and media, while interventions targeted on *understanding* and *creating* media content and texts were not found to the same extent (see also Abad Alcalá, 2019). The dimension of use emerged, for example, through the use of various online environments and services for different purposes (e.g., news, banking, travel) as well as various means of communication (e.g., email, online chat). In turn, in the category of "understand," a total of 11 studies were coded, of which nine focused on e-health information (e.g., evaluate, find). The results therefore emphasized the e-health literacy of older people to some extent and should be given more attention in the future (e.g., by increasing media literacy interventions). Only seven articles whose primary or secondary purpose was in production were coded in the category of *create*. An example would be creating your own life history using different formats (e.g., word, film) and sharing it with others. However, the number of codes in the categories of understand and create are quite significant, especially when compared to the category of use, for which a total of 35 of the 40 studies were coded. It can thus be concluded that the dimension of use was highly emphasized in the results and that there is a need to increase media literacy interventions and research on older people's own creative processes (e.g., movie productions, photo exhibitions) and critical analysis and understanding of media texts.

The literature review also examined what pedagogical approaches have been used in the reported media literacy interventions. In general, the results yielded several different pedagogical approaches (e.g., direct instruction, task-based approach, workshops), which were categorized in the following upper-level categories: (a) formal and teacher-centered pedagogy, (b) individual and learner-centered pedagogy, (c) creative pedagogy, and (d) blended and online pedagogy. In most cases, media literacy interventions included features from more than one upper-level category, so they could also be coded accordingly. However, the results showed that older people's media literacy interventions seem to rely heavily on *traditional and teacher-centered* as well as *individual and learner-centered pedagogies*. Formal and teacher-centered

pedagogy emerged from several studies, such as through fixed-length courses and/or the aims and content of the interventions often being designed by the instructor. Individual and learner-centered pedagogy occurred, among other things, through the goals set by the older person her-/himself and one-on-one tutoring. There were only a few indications of *creative* and *blended and online pedagogies* in the results.

Although certain upper-level categories were more prominent than others, some single pedagogical approaches could still emerge from any upper-level category, which should be considered when guiding the media literacy of older people. A needs-based approach is one such example. The needs-based approach is, in fact, one of the most significant pedagogical approaches according to the results and is also supported by other previous research findings and literature (see, e.g., Sayago et al., 2013; Strong et al., 2012; Tambaum, 2017; Vroman et al., 2015). The needs-based pedagogical approach emphasized in particular that guidance should be based specifically on older people's own needs, learning goals, experiences, abilities, characteristics, and habits of using devices and technology as well as their tested level of Internet anxiety (see, e.g., Lee & Kim, 2018; Patrício & Osório, 2016; Tambaum, 2017). The results also highlighted the benefits of peer-to-peer teaching and intergenerational learning approaches although there is a need for further research. In particular, the latter approach (intergenerational learning) has been criticized by Gamliel (2016) and Tambaum (2017) for suggesting that it can be in some way challenging because the teaching strategies of younger generations may be inadequate, and they may be more impatient tutors if, for example, they are not satisfied with their tasks. According to the first sub-study, young tutors should therefore be able to provide guidance from their own point of view and not just act as providers of pre-defined training. Previous research and the literature also recognize this feature, suggesting that younger generations may be more frustrated in teaching situations, but this can be supported by good planning, for example; however, as sub-study I shows, the issue should be further explored from a media literacy guidance perspective (see Findsen & Formosa, 2011). Nevertheless, sub-study I recognizes the importance of intergenerational learning as well as peer-to-peer teaching, which emerged in the studies through, for example, collaborative reflection and tasks, and peer support was seen as important for the overall success of the learning intervention.

The third research question in the literature review was intended to find out what kind of media literacy intervention outcomes were reported. According to the outcomes, most of the media literacy interventions were dealing with the lifelong learning, cultural expression, and personal fulfilment of older people (Livingstone et al., 2005). In particular, the following outcomes were coded into this category: "changes in attitudes (n = 27), increased ICT skills (n = 22), changes in everyday life (n = 5), reduced loneliness and social isolation (n = 5), e-Health literacy (n = 4), and other outcomes (n = 6)" (Rasi et al., 2021, p. 45). As to attitudes, the results were generally positive (e.g., increased self-efficacy, self-esteem, and confidence), and

negative attitudes (e.g., technology anxiety, frustration, alienation from contemporary society) were mentioned in only two sub-studies. Increased ICT skills were reported in more than half of the studies and were seen to have a significant impact on the lives of older people, such as increased optimism in life and an improved quality of life in general. The role of everyday life was also somewhat emphasized in the studies as participants might find, for example, that learning from computers could bring them closer to their families through interaction. All in all, a great deal of important issues emerged from the outcomes, but what is particularly interesting is that the following key areas that media literacy contributes: (a) democracy, participation, and active citizenship as well as (b) choice, competitiveness, and the knowledge economy, were less reported as the outcomes of the media literacy interventions (Livingstone et al., 2005). As stated in the sub-study: "The category 'choice, competitiveness, and the knowledge economy' received no coding, reflecting the fact that in the studied interventions older people were not primarily identified as workers in the labor market or consumers in the market economy" (Rasi et al., 2021, p. 45). Only four studies were coded in the "democracy, participation, and active citizenship" category, where, according to the results, participants experienced both positive (e.g., reduced inequality between rural and urban areas, less marginalized from the society) and negative (e.g., alienation from the contemporary technological world) feelings about the subject matter.

The final research question, which focuses on future implications, revealed many important findings about who should be offered media literacy interventions, which dimensions of media literacy should be targeted, what pedagogical approaches should be used, and who should support older people. The results suggest that more attention should be paid in the future to the higher age groups (over 76 years old), older people with little experience of technology who have been excluded from the study, "minority populations with low health literacy skills who live in different countries," and homebound older people (Rasi et al., 2021, p. 46). In addition, the results suggest that strategies to improve older people's self-efficacy and confidence in mastering Internet activities are needed and that more attention should be paid to literacy, such as e-health literacy and health media literacy. When teaching, for example, the abovementioned skills, the teaching should consider, among other things, the professionalism of the teachers and the learning atmosphere and environment as well as holistic teaching methods that are appropriate in regard to the needs and life situations of older people (Kim & Merriam, 2010; Sayago et al., 2013). The results also show that the responsibility for media literacy interventions for older people should not be limited to one support provider but rather should be shared by several parties, such as libraries, seniors' centers, other community-based settings, schools, caregivers, adult educators, and professionals who work with older people.

Overall, the first sub-study provides important information on media literacy interventions for older people at the international level on the basis of which

understanding of the topic could be increased. The results also provided a good basis for designing the design principles and the new course, which are also main goals of the present dissertation. The research results also show that there is a need for media literacy research and interventions for older people that should be further implemented and developed, in particular on the basis of the content, aims, pedagogical approaches, target group, and providers of the interventions. At the same time, the first sub-study responds to the lack of a research field in terms of research on media literacy in older people.

4.4 Sub-study II: Media Education for Older People—Views of Stakeholders

4.4.1 Data and Participants

The participants of the second sub-study consist of older people (n = 16) and professionals who work with them (n = 15) from Rovaniemi and the Helsinki Metropolitan Area. The older people were between 67 and 87 years old, meaning they met the age criterion of at least 65 years of age in order to be included in the study. Five of these older people were males and the rest were females (n = 11). The second sub-study also involved professionals, 14 females and one male. The professionals represented the following parties: adult education organizations, libraries, non-governmental organizations, and the University of the Third Age. Professionals were contacted directly by approaching potential parties or existing contacts by email and phone. The older people were recruited through professionals (e.g., the University of the Third Age) and different association events, such as clubs for older people organized by the Finnish Pensioners' Federation (e.g., a digital club). The snowball effect was thus used in the recruitment of the older people. The Facebook pages of the IkäihMe Project were also used to recruit participants, especially the older people, for a workshop in Rovaniemi. However, it did not produce the desired result, and the places were filled by the means already described.

4.4.2 Data Collection and Analysis Processes

I conducted the second sub-study alone, thus being the corresponding author. The data collection took place in two Finnish cities, and the data were collected from a total of 31 participants who participated in four creative participatory workshops in spring 2019. Separate workshops were organized for the older people and professionals, lasting about four hours at a time. I was responsible for the recruitment of participants and taking care of the practical arrangements for the two workshops held in Rovaniemi, while the other researcher (Timo Cornér) in the IkäihMe Project was responsible for the other two workshops in Helsinki and the related arrangements. The participants were fairly evenly distributed between

the workshops, as a total of 15 participants took part in the workshops held in Rovaniemi and 16 in Helsinki.

The data collection consisted mainly of qualitative data but was supplemented by a small amount of quantitative data. Qualitative data were collected from all participants through a case exercise in addition to which a questionnaire was collected from the older people. I was responsible for the design and collection of the case exercise from the older people and professionals. Another researcher in charge of the workshops in Helsinki was responsible for designing the questionnaire and its collection from the older people. My contribution to the questionnaire was mainly commenting on it and assisting in its collection. In the workshops, participants were initially briefed on the aims and purpose of the study and the IkäihMe Project, but, for example, the concept of media literacy was not explained to participants for fear of influencing the results too much and leading their ideas in a certain direction. Of course, the older people could get some inspiration for their design work from the survey that was conducted before the design work, which presented specific themes and questions. Moreover, the written informed consent was requested at the beginning of the workshops (see Appendix 1). After that, the questionnaire for the older people and the case exercise for the older people and professionals were conducted. The overall design and the implementation of the data collection were carried out together with the same researcher who designed the questionnaire and was responsible for the workshops in Helsinki.

As the first step in the data collection in the workshops for the older people, a questionnaire was collected. The questionnaire was used to examine the views of the older people regarding their levels of media literacy and what media literacy dimensions (use, understand, create) required training and support (see Appendix 2). The media literacy of the older people was examined using a total of six main questions, which included 3–10 different multiple-choice sub-statements. The multiple-choice sub-statements addressed the following themes: creation of online contents; searching for, understanding, and evaluating information; the purchase and use of devices and applications; and privacy protection and online social behavior. In the questionnaire, the task of the older people was to evaluate these sub-statements on a scale of 1–5 (1 = not true at all to 5 = completely true). In addition to basic information and a willingness to participate in further research, the questionnaire asked the older people to circle statements that needed further support and teaching. A separate section for feedback was also found at the end of the questionnaire, including both open and multiple-choice feedback. The older people took about half an hour to complete the questionnaire, and help was provided if needed. After the workshops, I analyzed the questionnaires with the Microsoft Word text application. In Microsoft Word, the findings were tabulated according to the results and the number of answers was calculated for the multiple-choice sub-statements. I also categorized the responses into three dimensions based

on the concept of media literacy (use, understand, create) and went through the data several times to avoid possible errors.

Data were also collected by using a case exercise for the older people and professionals, where participants' purpose was to design, in pairs, an ideal media literacy training program for older people (see Appendix 3). Four hypothetical older people had been invented for the case exercise to whom the media literacy intervention was to be targeted. To accomplish the exercise, the backgrounds of the hypothetical older people had been explained in certain respects (name, family, age, place of residence, technology use history). About 30 minutes were set aside for the actual design work, which did not include instructions for the case exercise or the review and discussion of the results. A total of 16 media literacy intervention designs were presented. The presentations were recorded and transcribed for later analysis in NVivo, in which I coded the results into different categories according to the three dimensions of media literacy (use, understand, create) and pedagogical approaches. The pedagogical approaches formed a total of the following three upper-level categories: *individual and learner-centered pedagogy*, *formal and teacher-centered pedagogy*, and *blended and online pedagogy*. However, the data could be coded into more than one category if they contained features from different categories. I also reviewed these data several times to avoid mistakes. The article creation process was conducted and the article was submitted during 2019, and it was published in early 2020.

4.4.3 Summary and Evaluation of the Results of the Sub-study

During the literature review, the second sub-study was also initiated with the aim of further developing theory and practice. Thus, the second sub-study provides a more detailed understanding of the topic, especially at a more local level, and the context of this sub-study is Finland. In addition to this, sub-study II examines older people's own perceptions of their media literacy levels. The media literacy of the older people was addressed in the second sub-study through the concept of media literacy and pedagogical approaches. Furthermore, the second sub-study defined older people as 65 or older, which is in line with the definition in the dissertation. The research data also consisted not only of qualitative data but also of a short quantitative questionnaire.

According to the results of the questionnaire, the perceptions of the older people about their own levels of media literacy varied, but some themes were more prominent than others. For example, the older people's strongest skills were found in the "purchase and use of devices and applications" and "creation of online contents" themes as well as in the "privacy protection and online social behavior" theme (e.g., picture and video taking and sharing them on social media, protecting a smartphone with a PIN or a display pattern) (Aufderheide, 1993; see also Ofcom, 2020). Two of these themes were also the weakest skills at the same time, with the most responses

coming from the following themes: "purchase and use of devices and applications" and "creation of online contents" (e.g., website designing, programming language). Although the questionnaire revealed some skills that the older people considered to be their strongest or their weakest, it is not possible to draw generalizable conclusions from them. Firstly, not all of the older people who responded to the questionnaire owned or had, for example, interest in using certain specific applications or devices. Secondly, on the basis of one answer, it was difficult for them to measure their own skills on a scale. This is an important consideration and should be taken into account in the future development of the questionnaire. Thirdly, the older people proved to be a heterogeneous group of people, and differences were found among the group members. Among other things, these examples can be used to conclude that the need for support is indeed individual and needs-based as well as that media literacy should be supported holistically.

The results on the basis of the questionnaire and the case exercise together showed that older people's media literacy should be guided and developed in each of its dimensions (use, understand, create) although the *use*-related dimension was emphasized more in both data collection methods (Aufderheide, 1993; see also Ofcom, 2020). Use was mostly emphasized in the older people's daily digital tasks for which they needed the Internet, such as communicating with close ones or using digital services. Use was also seen to be associated with a reduction in feelings of fear and could increase independence. The dimensions of *understand* and *create* were significantly less prominent although their prevalence varied between the questionnaire and case exercise. For example, the understand dimension was emphasized more in the questionnaire than in the case exercise. Based on the results, guidance would be needed, for example, on how to distinguish and find the right information and to increase understanding of copyright issues. Among other things, the use of various formats of production (e.g., video, photo, music) was found in the category of create. The variability of these dimensions is of no great significance, but what was interesting about the results was that although training in the use dimension already exists, there is still a need for even more. The results also raise the question of whether older people properly understand the real meaning of media literacy or whether it is understood as a mere skill related to the use of devices. It would be interesting to study this in the future and to find out how older people understand media literacy. In addition to this, more research and practical actions are also needed regarding the critical understanding and analysis of media texts and content as well as older people's own creative production.

According to the results of the case exercise, the pedagogical approaches in the second sub-study emphasized *individual and learner-centered* as well as *formal and teacher-centered pedagogies*. The results did not report on *creative pedagogy* at all. In addition, *blended and online pedagogy* yielded only some results and was a clearly smaller category compared to the other upper-level pedagogical approaches. The

results also highlighted single pedagogical approaches that should be considered in guiding media literacy among older people, such as an approach based on the needs of older people. For instance, all the designs were based on the pre-invented hypothetical case of an older person and their background information. The needs-based pedagogical approach was also reflected in the results as an emphasis on everyday life, from which needs can also arise. The second sub-study also found indications, for example, of the older person's own home as a learning environment where the media literacy instructor could visit. The results also emphasized guidance by the family and peers as well as one-on-one tutoring. Guidance was usually done face-to-face, and the results also had some references to classroom-like settings led by one or more knowledgeable teachers. Peer-to-peer teaching was also seen as important as peers can have a better understanding relating to each other's cognitive abilities. Moreover, only a few codings were found in the category of *blended and online pedagogy*, one example of which was learning to use the Skype application, both face-to-face and remote guidance. Although sub-study II emphasized certain pedagogical approaches, other less-reported or missing pedagogical approaches should not be overlooked. Bearing in mind the heterogeneity of the older people, for some older people, less-focused pedagogical approaches may be more appropriate than the pedagogical approaches that have received more attention. For instance, blended and online pedagogy can be particularly good for some older people who live long distances away or are otherwise tied to their home.

Overall, the second sub-study provided important additional information and refinements for the preliminary development of the design principles for media literacy geragogy. The second sub-study also confirmed that older people are not a homogeneous group of people and that there are many things to consider when guiding their media literacy (e.g., needs, goals, devices, media literacy levels) (see, e.g., Rasi et al., 2019). Media literacy for older people should be developed specifically on the basis of older people's own needs. Furthermore, after the second sub-study, the final design of a course on media literacy for older people was possible to implement. The course goals, content, materials, and pedagogy were designed based on these research findings in 2019 for teachers' pedagogical studies at the University of Lapland.

4.5 Sub-study III: Teacher Students' Designing of Media Education for Older People: Creative and Need-Based Pedagogies Emphasized

4.5.1 Data and Participants

The participants in the third sub-study consisted mostly of teacher students (n = 22), of which 17 were females and five were males, from the teachers' pedagogical studies at the University of Lapland. The teachers' pedagogical studies are conducted in Finnish and can be applied for by all undergraduate students from

different faculties (Education, Arts, Social Sciences, Law) and persons who have previously completed a master's degree at the University of Lapland. This means that people from different backgrounds who need a teacher's pedagogical qualification can apply for studies, and the studies do not limit, for example, from which profession you are applying for studies in. During the studies, students have to complete certain courses in order to graduate, which also includes a new course in media literacy for older people. With the exception of this course, the studies do not directly include other study modules related to media literacy although, depending on the teacher, it can also be referred to in other courses. After students have completed their studies, which may last a maximum of two years, and based on Finnish legislation on teachers' qualifications, the Faculty of Education grants the students a certificate of teachers' pedagogical studies (Teaching Qualifications Decree [998/1998]). The certificate shows suitability to work in the whole field of education, including adult education centers, community colleges, liberal educational institutions, universities of applied sciences, and vocational schools as well as high schools and elementary schools and also produces university pedagogical capabilities. However, for the third sub-study, it was not necessary to elucidate more detailed student background information.

In addition to teacher students, data were also collected from older people (n = 4) and professionals (n = 11) who had attended the evaluation workshop that was held at the end of the designed and piloted course. In the evaluation workshop, all the older people who had participated in the participatory creative workshop at Rovaniemi in the second sub-study were invited, but only four attended (3 females, 1 male). At the time of the evaluation workshop, they were 74–77 years old. The professionals (8 females, 3 males) were also partly the same as in Rovaniemi in the second sub-study with the exception of a few changes. The professionals represented the following parties: two non-governmental organizations and community colleges as well as a project (related to the development of digital skills for the older people) and local library. One of the participants came from Jyväskylä, and all the others were from the Rovaniemi area. The older people were contacted directly by email and phone, and email invitations were sent to the professionals.

4.5.2 Data Collection and Analysis Processes

The third sub-study was carried out as part of the "Older People, Media Education, and Facilitation of Learning" course that was piloted for the first time as part of teachers' pedagogical studies in academic year 2019–2020. The new course followed a blended learning approach and enabled the collection of research data (Boelens et al., 2017; Graham, 2006). The research material consisted of qualitative data from teacher students, older people, and professionals who work with older people. During the implementation of the course and again at the beginning of the assessment workshop, informed consent was orally requested.

During the implementation of the new course, the written assignment of the teacher students was collected as part of the course. In the written assignment, the students formed small teams whose task was to design a media literacy intervention for older people, which could be, for example, a workshop, course, or other event. Student teams also chose some dimension of media literacy (use, understand, create) as their main theme for their design (Aufderheide, 1993; see also Ofcom, 2020). The design was to also clearly show the content to be taught and the pedagogy used; moreover, the scientific literature, material previously learned in the course, and material produced in the IkäihMe Project had to be used to support the writing. Written assignments were returned to Moodle, which was used as the working environment of the course, where it was also possible to get peer feedback before the final return to the teacher in charge of the course. In the end, a total of nine designs were created, comprising 4–9 pages of written work (11,226 words).

Based on the written assignment, student teams presented their designs in an evaluation workshop at the end of the course, in which older people and stakeholders also participated. The presentations lasted about 15 minutes, and they were mainly PowerPoint presentations although other presentations were also included (e.g., video, Prezi). After each presentation, discussion and feedback were provided in six small groups consisting of older people, professionals, and students. Each group then highlighted the perspectives they felt were most important to all participants in the workshop. These were recorded and later transcribed (4,288 words). Groups also wrote the main points of the feedback on paper (n = 54), which were also collected as part of the research data. During the evaluation workshop, student teams were asked to send the presentations to me, the author responsible for the sub-study, but only seven presentations were returned. According to the two student teams that had not sent their presentations, one had misplaced it and the other simply did not send the presentation. The presentations received were compared to the results of the written assignments.

The third sub-study was written by a total of four authors, of whom I was the corresponding author. The research data were co-analyzed by all the authors even though I had the main responsibility to conduct the preliminary analyses and codings. First, I went through all the data several times, after which I exported the student teams' written designs and stakeholders' feedback to NVivo for initial and more detailed analysis. In NVivo, I coded the dimensions of media literacy (use, understand, create) and upper-level pedagogical approaches (individual and learner-centered pedagogy, formal and teacher-centered pedagogy, creative pedagogy, blended and online pedagogy) from the student teams' designs, which led to the creation of several subclasses. Also, for this sub-study, aspects could be coded into several categories. Furthermore, I coded the following categories from the feedback of the older people and professionals: target group, dimensions of media literacy, pedagogical approaches, and the provider of the media literacy intervention. I used

the content analysis to categorize the relevant themes together (Dinçer, 2018) on the basis of the research questions. The preliminary coding and data analysis were later reviewed and verified in a one-day-long online workshop with the other authors of the sub-study. Based on the discussion, more modifications were made by me. Overall, the analysis of the data of the third sub-study was also guided by the previous literature and was mainly deductive.

As corresponding author, my responsibilities included the data collection and conducting the preliminary codings for analysis. I also had most of the writing responsibility, which included writing the Abstract, Introduction, part of the theoretical framework ("Older People's Media Literacy and Media Education"), Results, Conclusions, Limitations, and partly also methodology sections. However, the other authors commented and made suggestions on the text that had been written, which resulted in the final version. The second author was responsible for part of the theoretical framework ("Learning about Older People's Media Education through Design and Stakeholder Collaboration") along with the third author. The second author also had a great responsibility in commenting on the work and, for example, in summarizing it. The third author was also partly responsible for writing the Methods section and the fourth author for general commenting on and review of the work. The last author was also the teacher responsible for the course although all the authors took part in designing the course. The article was written and submitted during 2020 and was approved for publication in 2021.

4.5.3 Summary and Evaluation of the Results of the Sub-study

A new course on media literacy for older people was piloted during the third sub-study, which also enabled the collection of research data. At the same time, the third sub-study extended the examination of media literacy in older people to a new target group, namely teacher students. The context of the third sub-study was also located in an even more limited area than earlier, which in this case was Rovaniemi.

The third sub-study was interested in finding out what dimension of media literacy (use, understanding, creation) the student teams' designs focused on (Aufderheide, 1993; see also Ofcom, 2020). Based on the research results, most of the student teams' designs were focused on the *create* dimension of media literacy. As many as seven of the nine designs included features in this category, and in six designs, "creating" was the main goal of the media literacy intervention. The creative dimension appeared in the results, for example, as an older person implemented or took part in a creative process, where the outcome could be, inter alia, a photo book or some other creative output. The dimensions of *use* and *understand* appeared to a lesser extent in the results although a total of seven designs were also coded in the category of use, for example. Despite the number of codings, in only two designs was use the main goal of the media literacy intervention (e.g., using devices, digital media). Only one design was found in the dimension of understanding, the main aim of which was to develop it.

The *use* and *understand* dimensions were emphasized to a lesser extent in the results, which could be explained, for example, by the fact that the course and its supplementary materials pay more attention to the *create* dimension of media literacy than to use and understand. This, in turn, is due to sub-studies I and II, which were used to assist in the design of the course. In those sub-studies, the create dimension was highlighted in the sense that it was not found in the results of sub-study II and was very limited in sub-study I. The dimension of understand was also not emphasized much in the results of the third sub-study. This is an interesting result in regard to why the dimension of understand was not emphasized in the students' designs as much as the dimension of create. Is it due to the fact that the dimension was not given very much emphasis in the teaching and supplementary materials, or is it because the students did not have an interest in, a need for, or, for example, the ability and knowledge to design an understand-related media literacy intervention for older people? These are important considerations to pay attention to in the following course implementation. Furthermore, the dimensions of media literacy could be evenly distributed among the student teams so that designs are created from all the themes—use, understand, and create.

The second research question of sub-study III was used to find out what pedagogical approaches were used in the teacher students' designs. The results were largely in line with the results of previous sub-studies as the research results demonstrated great importance for *individual and learner-centered* as well as *formal and teacher-centered pedagogies*. For example, references to the following approaches were coded in the "individual and learner-centered pedagogy" category: individual instruction, needs-based, peer-to-peer teaching, and intergenerational learning. References to these were found in five or more designs, and they contained the same types of features as in previous studies, such as older people being understood as a heterogeneous group of people and peer-to-peer teaching being provided through small group work or, for example, discussion. In turn, references to the following approaches were coded in the "formal and teacher-centered pedagogy" category: direct instruction, collaborative learning, task-based learning, and learning-by-doing. References were found in at least six designs. For instance, in the task-based learning and learning-by-doing categories, features such as homework and group assignments were coded.

In general, teaching was often carried out in small groups, and, according to one design, it was possible for an older person to receive one-on-one tutoring. Moreover, pedagogical approaches revealed, among other things, that the media literacy interventions were often fixed-length courses (e.g., six sessions) and usually taught by one or more experienced teachers (e.g., teachers of liberal education). Older people were also seen as a heterogeneous group of people in the student teams' designs, but they were also based on the feedback from the older people and professionals. The heterogeneity of older people therefore needs to be emphasized in future course

implementations. The research results also found some features related to *blended and online pedagogy*, but only in one design. This designed intervention combined distance and face-to-face work through activities on a social media platform (Facebook). Some references were also found to the *creative pedagogy*, such as multimedia production, biographical production, and empowering film pedagogy. These coded categories included features of the creative production process and/or the execution of some final output (e.g., photobook). However, these pedagogies (blended and online pedagogy, creative pedagogy) were less common compared to other approaches, and, for instance, pedagogies related to playfulness, to game-based content, or fully to online learning were completely absent from the results (see, e.g., Charlier et al., 2012; Kangas, 2010a). Therefore, in particular, these approaches could be further addressed in the course and generally considered as approaches when developing and guiding media literacy in older people.

The older people's and professionals' feedback indicated some room for improvements in the media literacy interventions although they were mostly perceived to be well designed. Based on the feedback, the following four categories were included: target group, provider, pedagogical approaches, and dimension of media literacy. The feedback suggested both expanding and delimitating the target group, for example, to all ages and based on skill level. Also, the parties that provide support to older people in terms of media literacy should be increased and with greater cooperation among them. Most of the feedback was related to providers such as libraries, traditional training organizations, and projects. Moreover, the older people and professionals feel that further attention should be paid to individual and learner-centered as well as formal and teacher-centered pedagogies, where especially needs-based, individuality, and direct instruction are highlighted. Alongside these, other outcomes pointed to, for example, the importance of the older people's feelings (e.g., fears), which should also be considered in teaching. The use of individuals' own devices was also emphasized in the feedback of the older people. Lastly, the feedback also indicated that support is still needed for the use of the devices, applications, and digital media as well as for creating content. The understand dimension also received feedback regarding that support is needed, for example, in finding interesting content on the Internet (e.g., blogs, vlogs).

The results of the third sub-study were important for the development of the final design principles for media literacy geragogy as they brought, for example, new perspectives from a group of teacher students. The final design principles are presented in detail in the next chapter and can be considered as the main results and contributions of this dissertation. Moreover, the results also showed that theory-based contact teaching is relevant as, for example, the dimension of create emphasized in the teaching was later emphasized in the students' designs. The course can thus be seen as having an important role and impact in increasing students' understanding of older people's media literacy. The research results also provided

some ideas for further development of the piloted "Older People, Media Education, and Facilitation of Learning" course. For example, the workshop implementation of the course brought the topic closer to the authentic world and enabled the sharing of information between different groups. In the future, the implementation of a similar course should therefore be continued or even expanded into a larger entity.

5 DESIGN PRINCIPLES FOR MEDIA LITERACY GERAGOGY

This chapter combines and analyzes the theoretical insights and the findings from the three sub-studies on the basis of which the media literacy geragogy for older people has been developed. The formation of the concept of media literacy geragogy has been guided by a DBR approach (Design-Based Research Collective, 2003), which is theory-driven, and thus emphasized the traditional notion of media literacy (Aufderheide, 1993; see also Ofcom, 2020) and geragogy (Findsen & Formosa, 2011) as well as an understanding of the concept of "older people" (Eurostat, 2019; Lee et al., 2018; WHO, 2011). The formation of the concept has also been deepened by the results of the sub-studies. Together, these have led to a total of eight design principles for media literacy geragogy, which can be considered as guidelines for promoting older people's media literacy. According to the design principles, media literacy geragogy needs to 1) *be based on the older people's own needs*, 2) *approach media literacy holistically*, 3*) use various pedagogical approaches*, 4) *utilize warm and socially skilled instructor(s)*, 5) *support cognitive skills*, 6) *support empowerment*, 7) *be systematic and continuous*, and 8) *increase cross-sectoral cooperation*. It is noteworthy that although the design principles are in numerical order, they are all equally important principles. Next, the key findings of the present study are presented in Table 3 and then in more detail in the text.

Table 3. *Design principles in relation to the results of the sub-studies.*

	What kind of media literacy geragogy supports older people's media literacy?		
Design principles	**Sub-study I**	**Sub-study II**	**Sub-study III**
Based on the older people's own needs	- resort to a needs-based approach - acknowledge older people's diverse life roles	- consider the different levels of media literacy, needs, interests, and daily lives of older people - make use of the older people's own devices	- identify older people as a heterogeneous group of people with different needs - allow older people to use their own devices
Approach media literacy holistically	- increase especially production as well as understanding and evaluation interventions - address other areas in addition to "lifelong learning, cultural expression, and personal fulfilment"	- focus on all the dimensions of media literacy - focus more on the dimensions of creation and understanding develop media literacy holistically	- consider all dimensions of media literacy: use, understand, and create, and implement interventions based on these
Use various pedagogical approaches	- utilize traditional and teacher-centered as well as individual and learner-centered approaches - exploit and explore peer-to-peer teaching and intergenerational approaches - increase the use of creative pedagogy	- favor traditional and teacher-centered as well as individual and learner-centered approaches - emphasize one-on-one tutoring and peer-to-peer teaching - enable the use of creative as well as blended and online pedagogies	- use individual and learner-centered as well as formal and teacher-centered approaches - enable peer support - emphasize creative pedagogy - increase blended and online as well as playful and game-based pedagogies
Utilize warm and socially skilled instructor(s)	- emphasize social support - make use of expertise, in particular from professional teachers and peers - critically consider younger generations	- use one or more instructors - make particular use of family and peers as support providers	- make use of knowledgeable teacher(s) - emphasize the importance of peers
Support cognitive skills	- use different and multiple pedagogical approaches - implement more media literacy interventions	- take advantage of different pedagogical approaches - make particular use of peer-to-peer teaching approach	- draw attention to pedagogical approaches that meet the needs of older people
Support empowerment	- improve older people's self-efficacy, self-esteem, and confidence in using the Internet - focus more on creative as well as critical analysis and understanding processes	- consider the daily lives of older people as one of the starting points for teaching - promote learning to use devices, which can increase independence and reduce fears	- increase learning to find interesting content on the Internet - support a variety of feelings that can arise
Be systematic and continuous	- carry out and develop further practical actions and research	- carry out up-to-date research and practical work specially among stakeholders	- increase cooperation and the number of media literacy providers
Increase cross-sectoral cooperation	- be carried out by number of different parties	- consider also the role of close ones	- increase cooperation and the number of media literacy providers

1) Based on the older people's own needs. The results of the first sub-study highlighted from the outset the importance of the needs-based approach for older people's media literacy geragogy, which eventually emerged in all the sub-studies and was one of the most significant outcomes. The findings are in line with the theory of geragogy and previous empirical research that older people's media literacy should be developed on a needs-based basis so that their own learning goals, needs, experiences, habits, abilities, devices used, motivation, and interests are considered in media literacy guidance (Abad Alcalá, 2019; Castro Rojas, 2018; Czaja & Sharit, 2013; Findsen & Formosa, 2011; Lee & Kim, 2018; Petranova, 2013; Rasi et al., 2016). To enable needs-based guidance and have successful and positive experiences in developing media literacy (Abad Alcalá, 2019), older people should be included in the design process of the educational content, and efforts should be made to organize the content "around life transitions, life events and daily hassles" (Godfrey & Johnson, 2009, p. 639). If successful, a needs-based approach can thus have a significant impact on the development of media literacy and commitment to the process, but if goals are not linked to older people's own needs and personal lives, it can negatively affect, for example, their motivation and interest (see also Chang & Lin, 2011). Motivation in particular as well as confidence are essential for learning, which are especially emphasized in old age although they are important at every stage of life (Boulton-Lewis et al., 2006).

In a needs-based approach, according to the sub-studies, the key is to consider the diversity and heterogeneity of older people rather than defining them stereotypically through chronological age alone, for instance (see also Czaja & Sharit, 2013; Dannefer & Settersten, 2010; Findsen & Formosa, 2011, 2016; Laslett, 1996). From the perspective of media literacy (use, understand, create) (Aufderheide, 1993; see also Ofcom, 2020), diversity is particularly enhanced by the different needs and interests of older people, which change with age, as well as other background factors (e.g., demographic background, chronological age, level of media literacy) (see, e.g., sub-study II) (Findsen & Formosa, 2011; Rasi et al., 2019). Also, the life roles (e.g., consumer, parent, leader, grandparent, spouse, citizen) of older people play an important part in this regard as there may be multiple, and they may change due to a change in family, work, or health status and increased leisure time, as indicated in the first sub-study (see also Vidovićová, 2018). Especially in terms of geragogy, it is important to consider the different life roles, and more generally the diversity of older people, especially in terms of cognitive abilities, as they have a great impact on learning and teaching (see, e.g., Findsen & Formosa, 2011; Vidovićová, 2018). However, when looking at the role of older people in society, it seems that older people are not yet identified as potential alternatives alongside younger ones from a marketing economy and labor market perspective, which should be strengthened (sub-study I) (see also Findsen, 2007). As long as older people, which is a large and still growing group, are not identified as a target group, for example in the field

of marketing economy, they will continue to be discriminated against, and the fulfillment of their needs will not be supported (e.g., age-friendly devices) (see also Hwangbo et al., 2013).

The needs-based approach also emphasized the daily lives of older people (see, e.g., sub-study II). According to the sub-studies, the daily life of older people is important because it usually raises needs and interests but also limiting factors for developing or maintaining their media literacy (see also Godfrey & Johnson, 2009; Sayago et al., 2013). For example, the lack of a device can be seen as limiting factor (sub-study II). In the sub-studies, everyday life was also emphasized through the digital services used (e.g., bank, health, travel), which make it easier to manage everyday affairs and keep in touch with loved ones (see, e.g., Ivana & Fernández-Ardèvolb, 2017; Vroman et al., 2015). There was a desire to use these digital services and to develop media literacy in general, usually using one's own devices (sub-studies II–III) because it was difficult and unnecessary for them to learn to use a new or different device (sub-study III). However, it is good to be aware that not all older people may have the necessary equipment and money, interest, or skills to purchase them (see, e.g., sub-study II). Therefore, attention should also be paid to this issue at the societal level so that equipment and the Internet can be provided in alternative ways, such as through libraries (see also Strover et al., 2019).

The everyday life of older people was also reflected in the sub-studies through the learning environment. In the first sub-study, the media literacy interventions were often organized in classroom-like settings, but in some cases they were adapted to meet the needs of the older people, such as in terms of ergonomics (see also sub-study III). In the second sub-study in particular, the learning environment of older people was often their own home, where the media literacy instructor (e.g., expert, own child) came to visit and where the needs could arise (see also sub-study III). In the third sub-study, it was also possible to realize one-on-one tutoring at older people's homes a maximum of six times on the basis of one student's design. Media literacy could sometimes also be guided at their child's home, and progress can be influenced by many other everyday things, such as Karelian pie coffees in between guidance (sub-study II). This is also in line with Sayago et al.'s (2013) research results ("Turning Activities of Daily Living into Learning Ones"), where coffee and tea breaks can rhythmize teaching by giving time for reflection and discussion. In summary, however, depending on the needs or physical condition of older people, guidance on the development of media literacy should also be possible and extended to the homes of the older people (sub-study II). In fact, guidance at home may be more informal, which (*informal learning*) has often been considered as a synonym for everyday living (Findsen & Formosa, 2011), but it can also be formal and non-formal, such as through the network (see also Ciurel, 2016).

Although the results of the present study suggest that the media literacy geragogy should be based on the own needs of older people, it should be kept in mind that not

all older people may be able to identify or express what kinds of things they would like to learn and develop in this regard. Not everyone is familiar with the concept of media literacy (use, understand, create) (Aufderheide, 1993; see also Ofcom, 2020), the Internet, the language used, the digital world, and/or the devices required, which makes it even more difficult to express needs and interests (see, e.g., sub-study II). This was also partly reflected in the results of the questionnaire in the second sub-study: "it was difficult for respondents to evaluate their expertise in a specific skill because they did not own or use the relevant applications (e.g., Facebook) or devices (e.g., smartphone, tablet)" (Rivinen, 2020, p. 199). Also, not all older people may even have an interest in using digital technology and media (see, e.g., sub-study II). Therefore, it is important that the media literacy instructor is a person who is able to create needs and arouse the interest of the older people to get acquainted with new devices or, for example, the use of digital media (see, e.g., Olsson & Viscovi, 2018).

2) Approach media literacy holistically. All the sub-studies found and highlighted that media literacy in older people should be guided holistically from all its dimensions—*use*, *understand*, and *create*—although some dimensions were clearly more prominent than others (Aufderheide, 1993; see also Ofcom, 2020). The use dimension was particularly prominent in the research results (sub-studies I–II), which is also in line with previous empirical research, which seems to focus for the most part on the use dimension as well (see, e.g., Castro Rojas, 2018; Gatti et al, 2017; Rasi et al., 2016). Also, no media literacy intervention focused entirely on one dimension but could include features from more than one dimension, thus also supporting the need for holistic media literacy. In light of these examples, it is clear that each dimension appears to play a significant role in the life of a media-literate person, and all of them need to be developed (see also Aufderheide, 1993; Vuojärvi et al., 2021). The idea of approaching media literacy holistically is also well suited to the ideology of geragogy, where education is seen as a holistic concept (see also Findsen & Formosa, 2011).

The research findings, in particular from sub-studies I and II, emphasized the *use* dimension more than the other dimensions (Aufderheide, 1993; see also Ofcom, 2020). In the first sub-study, the use of digital technologies and media occurred for a variety of purposes, such as entertainment, banking, news, travel, and health, while in the second sub-study, the use emerged mostly in everyday digital tasks that required the Internet (e.g., digital services, communication). The second sub-study reported that the "purchase and use of devices and applications" theme is at the same time one of the weakest but also the strongest skills of the older people participating in workshops, that is, both extremes can be found within the category. Although in the third sub-study the main focus of the student designs was not on the use dimension, the feedback from the older people and professionals showed that the most support is needed specifically for the use dimension (e.g., devices, social media). This may be due to the fact that the use of devices and digital media is easier to measure, and the

results can be seen more concretely than in terms of understanding and the critical evaluation of media texts and content (see also Abad Alcalá, 2019). Society also seems to emphasize technical skills so that people can cope with everyday life (see also Czaja & Sharit, 2013). One good example of this is the use of e-banking, which is expected of all citizens and which may also have been one of the reasons why it emerged in the first two sub-studies.

In the third sub-study, the teacher student designs clearly highlighted the creative production (e.g., photo books, blogs, vlogs) of older people more than other dimensions (Aufderheide, 1993; see also Ofcom, 2020). Of these, for example, two teacher student designs focused on describing the life histories of older people, the importance of which was also discussed in the first sub-study. Regarding the dimension of creation but also understanding, the first sub-study reported the need to increase abilities from the perspective of "sharing and reminiscing about their life histories" (Rasi et al., 2021, p. 48), to which sub-study III partially responded. Otherwise, no indications of creative production were found in the second sub-study and only a few in the first sub-study. The emphasis on the creation dimension of the third sub-study was also probably due in part to the fact that the pilot course material emphasized the more creative dimension compared to the other dimensions, which in turn was due to the results of the first two sub-studies (sub-study III).

The dimension of create was not the only one overshadowed by the dimension of use as the area of understand did not stand out in the research results, either. In fact, according to Abad Alcalá (2019), media literacy should focus on the dimension of understand advocated by the results of the present study in the sense that it was not very often referred to in the results. Nevertheless, some references to the dimension of understand were obtained from the sub-studies. References were found in the first sub-study, in particular in relation to e-health, health, and news literacies, which have also attracted general interest in the field of media education in recent years (see, e.g., Airola et al., 2020; Eeronen et al., 2019; Guess et al., 2019). According to sub-studies II and III, emphasis should also be placed on the accuracy of the information (sub-study II) as well as on security and privacy issues, according to the teacher students (sub-study III). Based on the feedback from the older people and professionals in sub-study III, guidance is needed to find content online (e.g., blogs, vlogs).

Although the sub-studies emphasized the need to develop media literacy holistically and cover all dimensions of media literacy (use, understand, create) (Aufderheide, 1993; see also Ofcom, 2020), more attention needs to be paid especially to the perspective of citizenship and participation in society since thus far older people as a group are less represented in this sense (sub-study I). The involvement of older people could certainly also have an impact on the prevailing stereotypes that represent older people in a negative way for the time being (see also Bai, 2014; Czaja & Sharit, 2013; Kelly et al., 2016; Rasi, 2020). To achieve the holistic goal of

media literacy geragogy, according to the first sub-study, research and practical work should also be strengthened especially for older people's own creative and playful media content production as it is currently receiving less attention (see also sub-studies II & III). What makes this interesting, however, is that this challenge occurs not only in older people as similar challenges have been observed in other groups in Finland (see Kulju et al., 2020). Overall, creative production should not be a new thing in the teaching of media literacy, but for some reason, this dimension is easily overlooked.

The research results also raise the question of whether the older people, the professionals, or the teacher students themselves have a real understanding of what *media literacy* really means and what abilities should be developed, as discussed briefly in sub-study II (Aufderheide, 1993; see also Ofcom, 2020). In sub-study II, two older people commented in the open section of the questionnaire about how little they know about things or how "stupid" they feel themselves to be in regard to these things. This is also supported by the low prevalence of the understanding dimension in the results, which is why a comprehensive understanding of older people in the field of media literacy should be developed (see also Abad Alcalá, 2019). Especially in today's world and society, it is increasingly important to be able to distinguish false information, which is not necessarily a very unambiguous thing (see also sub-study II) (see also Brashier & Schacter, 2020). For example, a pandemic (e.g., COVID-19) can further emphasize older people's ability to distinguish between false news, disinformation, misinformation, and propaganda when it is essential to find valid information to understand what is happening in the world and to protect themselves. It would also be important to develop the privacy and security abilities of older people, which emerged especially in the third sub-study. This is important as we live in a media-mediated society and increasingly use digital technologies and media to deal with important things (e.g., e-banking) (see also European Commission, 2020).

Finally, although the dimension of use was emphasized in the research results, this does not mean that related interventions should no longer be provided. On the basis of the second sub-study, guidance is still needed especially in relation to the use of devices (see also sub-study III). In particular, the management of everyday matters would be of paramount importance (e.g., e-health services, e-banking) (sub-studies I–II). Due to the different levels of media literacy among older people, there will also certainly always be a need for interventions regarding the use of equipment, especially as technology is constantly changing and evolving as well as because older people with more experience and higher media literacy will retire in the future (sub-study II). Of course, use is also an important and integral part of the implementation of the other dimensions of media literacy (understand, create), which is why ability must also be developed and maintained. This was evident in each sub-study as no media literacy intervention included only one dimension but to varying degrees the

features of the other dimensions. Therefore, use-based interventions also offer a good opportunity to integrate content from the other dimensions into the intervention, which in turn can arouse older people's interest in their development and support the holistic development of media literacy.

3) Use various pedagogical approaches. The results of the present study clearly showed that various pedagogical approaches should be used to guide and develop media literacy in older people. The conclusion is based on the fact that the sub-studies simultaneously used a number of different pedagogical approaches, such as the *task-based approach*, *blended learning*, *collaborative learning*, *peer-to-peer teaching*, and *intergenerational learning*, which could be further categorized into upper-level categories (i.e., general pedagogical approaches) as follows: *individual and learner-centered pedagogy*, *formal and teacher-centered pedagogy*, and *creative pedagogy* as well as *blended and online pedagogy*. All the sub-studies also particularly emphasized the diversity of older people and a needs-based approach (see, e.g., Rasi et al., 2016). The needs-based approach was originally included in the present design principle, but, based on the results and previous empirical studies, it was separated into its own independent design principle due to its importance (see also Findsen & Formosa, 2011; Rasi et al., 2019). The diversity and different needs (e.g., in terms of media literacy) of older people also reinforced the formation of this design principle as different needs can have a significant impact on how teaching is implemented and what kind of pedagogical approaches are used (Aufderheide, 1993; see also Ofcom, 2020). From this, in turn, we can conclude that one particular way to implement and develop older people's media literacy is not suitable for everyone but that *various pedagogical approaches* that consider the needs of older people are needed (see also Hobbs, 2010). Therefore, as geragogy also points out, instructional plans must be tailored to the needs of the older people, including the pedagogical approaches used (Findsen & Formosa, 2011).

Despite a number of different pedagogical approaches, all the sub-studies showed that the greatest emphasis was placed on individual and learner-centered as well as formal and teacher-centered pedagogies. Both upper-level pedagogical approaches highlighted in particular face-to-face teaching and learning, involving at least one or more experienced teachers or instructors. It can also be said that how teaching was implemented in these pedagogical approaches had some similarities, for example, how older people were accustomed to studying in their youth (e.g., teacher-led, classroom-like). Especially formal and teacher-centered pedagogy was usually guided by an external authority that plans the teaching in advance, while in individual and learner-centered pedagogy, goals are influenced by the older people's own interests and needs (see, e.g., sub-study I). Moreover, in formal and teacher-centered pedagogy, teaching situations were often reminiscent of classroom situations and fixed-length courses, albeit in the second sub-study in particular, teaching could also take place in the older people's own home, a spa, or even a bar, focusing more on individual

and learner-centered pedagogy. It was also very common for teaching to take place in small groups or in one-on-one tutoring situations, where other peers or members of the generation can be involved (Abad Alcalá, 2019; Czaja & Sharit, 2013; Xie & Bugg, 2009). In particular, according to the sub-studies, one-on-one tutoring was central to individual and learner-centered pedagogy (see, e.g., sub-study II).

Pedagogical approaches based on creative production were not emphasized in the systematic literature review (sub-study I), or in older people's and professionals' views (sub-study II) at all or only a little, but in the third sub-study, media literacy in older people was mainly implemented through creative pedagogy. In the third sub-study, the teacher students' designs for media literacy interventions for older people focused mainly on creative production or its process. Creative production emerged from the teacher students' designs through the pedagogical approaches used (*empowerment of film pedagogy*, *multimedia production*, *biographical production*) and through a number of different implementations, such as films, photo books, and blogs. These allowed older people to present their interests or tell their life stories, which can also be thought to be in line with geragogy, which values previous experience and knowledge and is appreciated and used to learn new things (see, e.g., Castro Rojas, 2018; Findsen & Formosa, 2011). However, on the basis of the first sub-study, older people should be guided to share and reminisce about their lifer histories even more. The first sub-study also shows, at a more general level, the need to increase media literacy interventions and research especially for older people's own creative production (see also sub-studies II & III) (Aufderheide, 1993; see also Ofcom, 2020). Therefore, more attention should be paid, for example, to *playful* and *game-based learning* as well as *blended* and *online learning*, which were either completely or almost completely absent from the sub-studies (see, e.g., sub-study III).

In addition to the upper-level categories, the results also highlighted the lower-level categories, which reported on several important pedagogical approaches. Based on the sub-studies, one such method is the collaborative learning approach, which allows for social interaction with other actors, especially with peers (see also Castro Rojas, 2018; Sayago et al., 2013; Xie, 2007). Social interaction can, according to Czaja and Sharit (2013, p. 14): "motivate older adults to participate in learning and training activities." Social interaction also appeared to be an important factor in the implementation of media literacy intervention in the first sub-study and was seen as promoting the self-efficacy of older people as users of digital technologies and media (see also Lam & Lee, 2007). Moreover, the first sub-study reported that media literacy interventions can reduce social isolation and loneliness (see, e.g., Blažun et al., 2012; Chiu et al., 2016), which can also be reduced, for example, by communicating with loved ones, perceived as important in sub-study II. Therefore, social interaction should be supported through various forms of group work, workshops, or, for example, joint discussion and reflection with peers (sub-studies I–III) (see also Castro Rojas, 2018).

Peer-to-peer teaching, which is also an important approach in terms of geragogy, was emphasized in all the sub-studies (Findsen & Formosa, 2011; Formosa, 2012). Based on sub-study I, it was considered useful not only for the recipient but also for the donor of the guidance (see, e.g., Sayago et al., 2013; Strong et al., 2012). The approach was considered particularly important because peers may have a better understanding of the specifics of chronological age than the younger generation (sub-study II). Peer-to-peer teaching was also evident in the third sub-study, where references to it were found in a total of eight of nine students' designs. In these designs, peer-to-peer teaching was usually provided by other participants in the course but also from a voluntary peer, as in one design (see also sub-study I). Although peer-to-peer teaching was popular in the development of media literacy among the older people, and as Formosa (2012, p. 39) states: "peer teaching is the most effective method in late-life learning" (see also Findse & Formosa, 2011), it needs to be borne in mind that it is quite understudied, as is intergenerational learning (sub-study I). Intergenerational learning manifested in the sub-studies as a learning event between an older and a younger person (e.g., a grandchild, volunteer teenager), but in the third sub-study, it was also understood in one design that older people can be of different generations. This is, in fact, a good consideration, supported by the definition of the chronological age of older people, where older people can be divided into even more specific age groups (e.g., youngest-old, middle-aged, and oldest-old) (Lee et al., 2018) through which older people can be seen to belong to different "generations" within the age group (see also Järvensivu & Ryrjä, 2014; Laakso, 2016). The age group over 65 is thus broad, and within it media literacy can vary radically, such as in terms of Internet use, so it is possible to think that older people of different ages can represent different generations in this respect (see also OSF, 2020). In any case, intergenerational learning was also reported to have many good effects, such as intergenerational solidarity, but it also garnered criticism (sub-study I) (see also Gall, 2014). According to the first sub-study, younger generations may be impatient, and their teaching strategies may be inadequate (Gamliel, 2016; Tambaum, 2017; see also Xie, 2007).

When guiding older people's media literacy, it is important to consider the size of the group being taught (Abad Alcalá, 2019). According to all the sub-studies, older people should be guided in small groups, in pairs, or through one-on-one teaching situations (Abad Alcalá, 2019; Czaja & Sharit, 2013; Xie & Bugg, 2009). In the first sub-study, the group sizes were in the range of about eight to nine people, and in the third sub-study, the group size was, three to five, according to one intervention. Big events, such as massive open online courses (MOOCs), were not popular in any of the sub-studies. This can be attributed to the fact that in small groups it may be easier for an older people to ask for help or ask questions; likewise, for the teacher, guiding the media literacy of older people personally and according to a needs basis is easier than it would be in a big group. Small group sizes thus make it possible to

better address the wishes and needs of individuals (see also Findsen & Formosa, 2011). Also, if the group includes older people with different levels of media literacy, they can provide peer-to-peer help more easily (sub-study III) (see also Formosa, 2012; Xie, 2007). However, according to the feedback from the older people and professionals in the third sub-study, working in a group can also be perceived as somewhat disruptive, which is why individual guidance should also be provided (e.g., one-on-one guidance). This can also be linked to the results of a study by Sayago et al. (2013), which mentions that all the older people who participated in their study identify interactions as challenging if they do not know their peers well enough. Therefore, older people should also be offered the opportunity for one-on-one tutoring, which was evident in all the sub-studies.

According to Godfrey and Johnson (2009, p. 637): "There is evidence that the quality of the learning environment and the way training is delivered can either be supportive or act as a barrier to use of online technology." When developing the media literacy of older people, it is especially important to draw attention to the following issues, according to the sub-studies: the pace of teaching (not too fast, a little at a time) (sub-studies I–III); the duration of the teaching (e.g., not too long at one time, divided into several different courses) (sub-studies II–III); and providing long-term learning sessions and continuity (sub-studies I & III), material such as printed handouts (sub-studies I–III), and sufficient repetition (sub-study I), which can also be seen to be in line with geragogy (see also Findsen & Formosa, 2011; Abad Alcalá, 2019). Sub-studies II and III also highlighted the learning-by-doing approach, and all the sub-studies had some indications of task-based learning (e.g., homework). In the end, however, it must be kept in mind that the choice of pedagogical approaches is largely guided by the individual's own needs, which must be considered.

4) Utilize warm and socially skilled instructor(s). Based on the sub-studies, older people's media literacy should be guided by a person with the characteristics of a warm and socially skilled instructor (see, e.g., Olsson & Viscovi, 2018). Especially the first sub-study revealed certain qualities of the instructor, such as being friendly, respectful, compassionate, and supportive, which can be seen as suggesting the warm and social skills mentioned above (see also Abad Alcalá, 2019; Czaja & Sharit, 2013; Xie & Bugg, 2009). According to Abad Alcalá (2019), the instructor should be able to build a safe and friendly environment (almost family-like) as well as be emphatic, which encourages older people to ask questions. Instructor must be aware of the diversity of older people and the challenges associated with chronological age, which geragogy can also be seen to emphasize, as understanding these aspects can be thought of as facilitating guidance and teaching and tailoring instructional plans to individuals' needs (Dannefer & Settersten, 2010; Findsen & Formosa, 2011). In particular, the second sub-study highlighted this finding and mentioned that there is an understanding of cognitive skills especially among peers. At the same

time, all the sub-studies emphasized either directly or indirectly social support, thus demonstrating the importance of the instructor's social skills. According to the first sub-study (Rasi et al., 2021, p. 45), "social support from peers proved beneficial for both the provider and the receiver." Therefore, it is important for the instructor to promote social networking and interaction between participants as well as a collaborative learning environment (Castro Rojas, 2018), such as through collaborative reflection, discussion, and tasks (sub-study I) (see also Findsen & Formosa, 2011).

The media literacy of older people should be guided by one or more instructors, according to the sub-studies. The number of skilled instructors should be determined depending on the individual's own personal needs (see, e.g., sub-study III). Guidance from one instructor may be sufficient for one older person, while another is guided by several instructors in collaboration with others, such as e-banking being handled by the bank staff, while other general matters, such as tablet use, are assisted by peers, family, and library staff. A similar situation emerged in sub-study III, where one design initially involved several instructors in home visits, and the number of instructors was later assessed according to the needs of older people. Moreover, in the case of a group situation involving more than one older person, the number of instructors should always be considered in relation to the size and skill levels of the group (see, e.g., sub-study III). It is good to note that in group situations, more advanced peers can also provide guidance to peers and act as media literacy instructors (see, e.g., Sayago et al., 2013). As already mentioned, based on geragogy, peer-to-peer teaching has been perceived as a good way to teach and guide older people (see, e.g., Formosa, 2012).

The instructor does not necessarily have to be a professionally trained expert although the sub-studies suggested, for example, the following as instructors of media literacy for older people: teachers in general, graduate students, teachers of liberal education, ICT instructors, and teachers with experience in media and adult education. Experts were used especially in more formal teaching, while informal teaching used non-professional persons, such as family members, peers, and younger persons, which was particularly emphasized in the second sub-study (see also Castro Rojas, 2018; Hänninen et al., 2021; Olsson & Viscovi, 2018). Family and other "warm experts" play an important role especially in identifying the support needs of the older people, such as through discussion or enabling the purchase of equipment by buying it as a gift (Olsson & Viscovi, 2018). However, it is good to remember that loneliness is a major problem among older people, as Czaja and Sharit (2013, p. 6) state: "many older people live alone and have limited access to support," which COVID-19 has further highlighted (Kotwal et al., 2021). Therefore, guiding media literacy should not be the sole responsibility of the family.

Because older people's media literacy is strongly needs-based, instructors must be flexible in this regard and consider changing needs and interests between different

dimensions of media literacy (use, understand, create) (Aufderheide, 1993; see also Ofcom, 2020). The results highlighted repetition and a slow pace so that one task is done at a time, which can be expected to require patience from the instructor as well (see also Abad Alcalá, 2019; Findsen & Formosa, 2011). The first sub-study also questioned whether the younger generations are really competent to guide the media literacy of older people because they may not have the required patience or teaching strategies may not be adequate (Gamliel, 2016; Tambaum, 2017). Other things that should be considered, according to Abad Alcalá (2019), are the language used, which must not be too complex either (e.g., jargon). For instance, the use of programming language was one of the weakest skills of older people based on the second sub-study, which in itself supports the previous argument against using language that is too difficult as part of teaching. Programming also contains foreign language words that can make it difficult to learn (see also Cerna et al., 2020; Müller et al., 2015).

Finally, it must be emphasized that the present study has demonstrated the importance of the role of peers and family members, in addition to different professionals, in guiding the media literacy of older people (see also, Castro Rojas, 2018; Olsson & Viscovi, 2018). However, this is not entirely in line with, for example, Findsen and Formosa's (2011) conception of the geragogy that is seen to take place in the post-work and post-family period. Rather, the results emphasize the role of family and close ones when it comes to older people's media literacies (see also Castro Rojas, 2018; Rasi et al., 2016). Ultimately, the responsibility for developing older people's media literacy should lie with all of us, both the learners themselves and anyone who is able to provide guidance, that is, the real-life networks of older people (e.g., neighbors, friends, social and health workers) (Godfrey & Johnson, 2009; see also Dunning, 2005).

5) Support cognitive skills. According to geragogy, it is important to pay attention to cognitive skills as they have a significant impact on learning (Czaja & Sharit, 2013; Findsen & Formosa, 2011). In order to develop media literacy in older people, we need to support these skills as cognitive skills may decline with age (e.g., impaired vision and memory) (see, e.g., Abad Alcalá, 2019; Castro Rojas, 2018; Czaja & Sharit, 2013; Findsen & Formosa, 2011; Silverstein 2014). The impairment of cognitive skills can also lead to wider effects, such as more limited quality of life and independence (Bárrios et al., 2013). However, according to Rasi et al. (2019), media literacy education interventions can play an essential role in supporting older people's cognitive skills. Vaportzis et al. (2017, pp. 847–848) align with Rasi et al. by stating that "Participation in a tablet computer training intervention improved performance on one cognitive ability domain, Processing Speed, compared with a no-contact control group" (see also Castro Rojas, 2018). However, interventions alone do not directly improve cognitive abilities, but of importance is how the instructor has designed and implemented them and what pedagogical approaches

have been used (see also Castro Rojas, 2018; Findsen & Formosa, 2011). For example, the pedagogical approaches used can indeed have a significant impact on cognitive skills and their support, which was also reflected in the results of the sub-studies (see also Findsen & Formosa, 2011).

Although Finnish older people are nowadays in a better state of function than their peers some decades ago (Koivunen et al., 2020; Munukka et al., 2020), cognitive skills should continue to be supported. Support for cognitive skills was evident in all the sub-studies, for example, through several different pedagogical approaches used, such as printed handouts, sufficient repetition, and a slowed pace of instruction (see, e.g., sub-study I) (see also Castro Rojas, 2018; Findsen & Formosa, 2011). In the third sub-study, the older people and professionals provided feedback that the teaching should be carried out in such a way that there are not too many tasks at once but rather one at a time (see also Abad Alcalá, 2019), which aligns with Findsen and Formosa's (2011) idea of multitasking and its challenge for older people. According to Abad Alcalá (2019, p. 765), materials that are used in education should be clearly structured, and they "must be adapted to compensate for the percentage reduction in motor and cognitive skills," which was also briefly referred to in the feedback from the older people and experts in the third sub-study. Moreover, all the sub-studies mentioned homework as supporting older people's cognitive skills. With homework, older people have to perform certain exercises independently, which will then be considered later together, such as via discussion (sub-study II).

There were also brief indications of the importance of cognitive abilities in older people in the first sub-study, in which the results of media literacy interventions found certain features of cognitive abilities. A total of six articles reported, among other things, on other outcomes of media literacy interventions, including the stimulation of collective memories and improvement in cognitive abilities. More specifically, these were not addressed in the sub-study, but the results suggest, based on previous research literature, that media literacy interventions can support the cognitive skills of older people (see, e.g., Rasi et al., 2019; Vaportzis et al., 2017). In the third sub-study, the feedback from the older people and professionals also included a brief mention of the importance of the learning environment (e.g., ergonomics), which can be considered an important component in supporting cognitive skills (see also sub-study I) (see also Czaja & Sharit, 2013). If the learning environment is ergonomically poor or otherwise unsuitable (e.g., unsafe) for older people, it can negatively affect concentration, memory, and learning in general (see also Castro Rojas, 2018). In this respect, the learning environment can be seen as impairing or supporting cognitive skills and should therefore be addressed. It is also important that digital technology and media also support cognitive abilities not only in terms of external features but also in terms of internal assets such as applications. However, according to Hwangbo et al. (2013, p. 604): "Regardless of

previous attempts to better the touch screen experiences, the studies that targeted the elderly are few, even though the requirements for elderly users are different due to their declining cognitive abilities. We do not know yet what features should be provided to suit the elderly's cognitive skills or how to provide these features." In this regard, the third sub-study received a brief bit of feedback from one participant that called for easier-to-use programs for older people.

In the context of supporting cognitive skills, Castro Rojas's (2018, p. 129) study mentions the following: "Provide resources to support declining cognitive abilities," such as by using scaffolding. Although scaffolding in particular did not emerge in the present study, there was brief mention of it in the third sub-study. Castro Rojas (2018, p. 129) also states that: "Encouraging the co-creation and circulation of learning resources and memory aids among the participants." There were no direct indications of this particular issue in the sub-studies, but the results showed, for example, the importance of peer-to-peer teaching and the fact that peers can better understand the specifics of their peers and thus be good instructors of media literacy (see, e.g., sub-study II) (see also Formosa, 2012; Xie, 2007). However, the observations made by Castro Rojas (2018) are important even though they were not particularly emphasized in the present study.

6) Support empowerment. Educating older people is important because it is seen as reducing social exclusion and increasing, for example, empowerment, wellbeing, and personal fulfilment (see, e.g., Council of the European Union, 2018; Findsen & Formosa, 2011; Kump & Krašovec, 2007; Livingstone et al., 2005). In particular, empowerment, which generally refers to a process in which older people experience increased control and decision-making power over their own lives and related issues (see, e.g., Kabeer, 1999), is linked, inter alia, to the other features mentioned above, such as increased wellbeing and inclusion in society. Therefore, supporting empowerment is important in terms of geragogy and media literacy and should be pursued (see, e.g., Findsen & Formosa, 2011; Livingstone et al., 2005; Stephani & Kurniawan, 2018; Wong et al., 2014). According to Stephani and Kurniawan (2018, p. 7): "Digital media has an important role in empowerment efforts" (see also Czaja & Sharit, 2013). Digital technology and media offer, for instance, the opportunity to search for, produce, and share media texts and content as well as participate in decision making, which can improve overall quality of life (see also Hobbs, 2011). In turn, a lack of media literacy can be seen as leading to exclusion from societal and community life (Petranova, 2013). Thus, the sixth design principle focuses on providing space and support for the individual's own reflection and growth as a user of digital technology and media, which in turn can lead to the *empowerment* of older people (see, e.g., Del Prete et al., 2011; Karavidas et al., 2005).

According to the sub-studies, empowerment should be supported on the basis of older people's needs and through the development of all dimensions of media

literacy (use, understand, create) although the results placed particular emphasis on the use dimension (Aufderheide, 1993; see also Ofcom, 2020). The sub-studies showed that the empowerment of older people can be fostered, for example, by encouraging their use of digital technologies and media so that they are able to take care of everyday things through them (e.g., e-banking), which increases the independence of older people (see, e.g., sub-study II) (see also Erickson & Johnson, 2011; Karavidas et al., 2005). The use of social media channels, such as Facebook, Instagram, and Skype, can increase empowerment (see also Hobbs, 2011), the use of which was also sought to be learned in the sub-studies (see, e.g., sub-study II). For example, finding and using self-relevant social media channels and content can increase empowerment (sub-study III), or it can be enhanced by communication with close ones through different channels, which emerged especially in the second sub-study (see also Gatti et al., 2017; Hill et al., 2015; Karavidas et al., 2005). In addition to use, it can also be considered important for one's own production, such as life histories and their distribution on social media (sub-study I). Their realization could be better supported by age-friendly design, such as for programs, which was briefly revealed in the third sub-study in the feedback from the older people and professionals (see also Hwangbo et al., 2013; Zhao et al., 2020). However, the aim of holistic media literacy is not only to foster the development of certain skills but also to increase the overall understanding of oneself as a user of digital technology and media as part of a digital society. Based on the first sub-study, media literacy geragogy should particularly develop older people's self-efficacy, self-esteem, and confidence as digital technology and media users, which can be considered characteristics for empowerment (see also Blažun, 2013; Erickson & Johnson, 2011; Gatti et al., 2017; Lagana et al., 2011).

Empowerment can be promoted by providing enough space and support for different feelings and thoughts during the learning process and by progressing according to older people's own needs (see also Castro Rojas, 2018). Also, Abad Alcalá (2019, p. 765) states that "the initial stage must involve positive and successful experiences to promote commitment and avoid frustration and abandonment." Thus, for example, negative emotions and fears may not necessarily become barriers to learning something new, which was briefly referred to in the third sub-study (see also sub-study I). Based on the second sub-study, learning to use devices can be seen as reducing fears and increasing independence (see also Castro Rojas, 2018), which is why media literacy interventions are important. In the third sub-study, one intervention also used a *critical-emancipatory learning* approach, the purpose of which was to encourage belief in one's own abilities and thereby inspire learners to participate more in the production of content on social media, for example. Moreover, one study in the literature review found that "ICTs could be a useful means for helping older women maintain contact with the wider world, and in the process keep their minds active and alert for new learning," and older women were

reported to achieve empowerment, liberation, and satisfaction at the end of the intervention (Del Prete et al., 2011, pp. 173–174).

The first sub-study presents three areas affected by media literacy that can be considered important in terms of empowerment. According to Livingstone et al. (2005, p. 3), media literacy is perceived to contribute to the following areas: "(i) democracy, participation and active citizenship; (ii) the knowledge economy, competitiveness and choice; and (iii) lifelong learning, cultural expression and personal fulfilment" (sub-study I). Of these, the latter area was clearly more prominent in the first sub-study than the other areas. The most coded in this category were changes in attitudes and ICT skills, where the change was generally positive. The second area did not receive any codings, which, according to the first sub-study, indicates that older people are not fully identified, for example, as consumers in the market economy. Overall, while media literacy interventions can be seen as contributing to some degree of empowerment, emphasis should also be placed on actions focusing on the first two areas, which would further increase the empowerment of older people (sub-study I).

The research results highlighted the importance of the life roles of older people, such as being spouses, grandparents, consumers, and students (sub-study I) (see also Vidovićová, 2018). Various life roles may emphasize, for example, different emotions (e.g., fear, loneliness) and needs (e.g., staying in contact with grandchildren, being independent), which should be considered when developing older people's media literacy. Strengthening the different roles of older people, such as that of a consumer, may therefore also affect "the knowledge economy, competitiveness and choice" category mentioned earlier in this section and thus empower older people (Livingstone et al., 2005, p. 3). Moreover, attitudes toward aging and older people should be turned more positive by demonstrating the benefits and opportunities of digital technologies and media rather than intimidation (sub-study I). However, it is not enough to make older people's own attitudes more positive; attention should also be paid to the broader social level (see also Rasi, 2021). Making stereotypes of older people more positive could have many beneficial effects; for example, it could influence the older person's own thoughts about themselves and encourage them to participate more actively in the social debate and in content production (see also Czaja & Sharit, 2013; Glendenning et al., 2000; Rasi 2020).

Increasing empowerment can also be seen from the perspective of considering the needs of older people, for example, in the instructional plan and pedagogy design (Findsen and Formosa, 2011). Empowerment can be increased, for instance, according to sub-studies, through discussion, reflection, and collaboration. Also, in the third sub-study, one of the media literacy interventions designed by the teacher students used, in addition to a critical-emancipatory learning approach, *empowering film pedagogy*. In this design, the older people aimed to produce an audiovisual production, alone or together with others, about something that the older people

considered relevant to them and thus to empower themselves (sub-study III). Although the empowering film pedagogy was used in only one design, the idea and method of implementation fit this design principle (*empowerment*), and it would be good to refine it further for practice. However, as Cusack (2000, p. 62) writes: "The empowerment, i.e., liberation and transformation, of older people through education must be intentional and explicit," which should be kept in mind when designing and implementing media literacy interventions aimed to empower older people.

7) Be systematic and continuous. Media education can be described as a lifelong, systematic, and goal-oriented process, the focus of which is the development of media literacy (use, understand, create) (Aufderheide, 1993; see also Ofcom, 2020), but, as Petranova (2013, p. 13) states, especially in relation to older people, "the concrete forms and methods of media education are minimal, or they do not exist at all." Therefore, it is particularly important to emphasize the principles of systematicity and continuity in the development of media literacy among older people, especially as they tend to be outside formal education and working life, and access to media literacy support cannot therefore be easily guaranteed. The results of the sub-studies did not specifically emphasize systematicity and continuity from the perspective of the media literacy of older people, with a few minor exceptions. Otherwise, this principle, which is in line with the general guidelines of media literacy in Finland (see, e.g., Jarvis, 2004; Ministry of Education, 2015; Salomaa & Palsa, 2019), was mainly based on the lack of research results, which in itself is a significant research result. The lack of evidence is also supported by the general diversity and fragmentation of the research results. The fragmentation and diversity of the results is represented, inter alia, by a number of different perspectives on who provides the media literacy guidance, how it should be implemented, what kind of pedagogies should be used, and what dimensions of media literacy (use, understand, create) should be supported (Aufderheide, 1993; see also Ofcom, 2020). Based on this conclusion, the field of media literacy for older people still seems to be very fragmented, requiring more systematicity and continuity.

The fragmentation of media literacy in older people was also emphasized in sub-study III, which highlighted in the feedback of the older people and professionals the need to increase the number of instructors and the cooperation between different providers (see also sub-study I) although quite a lot of work relating to media literacy is being done in Finland at the moment (e.g., in libraries, families, organizations). This, in turn, raises questions of whether older people find guidance from those who are already providing it and whether instructors reach all the older people that need support to develop their media literacy (e.g., the homebound, the lonely, immigrants, those living long distances away) and whether media literacy education fully meets the needs of older people (sub-study II). In addition to this somewhat ambiguous situation, which supports the idea that systematic and continuous guidance should be further developed and ensured, the second sub-study also briefly looked at the

future retirement of older people who are likely to have more experience and skills in media literacy. According to sub-study II, it will affect future media education work, which is why more up-to-date research and practical work is needed, especially with stakeholders (i.e., older people, people who work with them) (see also sub-studies I & III).

The research results in all the sub-studies indicated that older people's media literacy interventions were not guided by any clear guidelines, curricula, or well-established principles although certain pedagogical approaches (e.g., peer-to-peer teaching) and dimensions of media literacy (e.g., use) were repeated in the results (Aufderheide, 1993; Findsen & Formosa, 2011; Formosa, 2012). The results also emphasized considering the needs and interests of older people with regard to media literacy guidance (sub-studies I–III) as they no longer have a compelling need to develop, for example, certain skills from the perspective of studies and work, which in turn shows that media literacy guidance for older people differs from that of children and young people (see also Petranova, 2013; Rasi et al., 2019). The results show differences from other age groups not only in terms of content but also in terms of pedagogical approaches although they are similar in their basic principles. For example, according to sub-study I, long-term learning sessions should be provided, which can be considered to be related to changing cognitive abilities, for instance, that require attention in terms of systematicity and continuity. Because there are differences between different age groups and important aspects to consider when developing media literacy in older people, they should be compiled and grouped together, as this study does. However, they must be compiled with particular care and attention to the heterogeneity and diversity of older people, and should not have too strict or inflexible guidelines and principles, such as regarding the length or implementation of the course (see also Dannefer & Settersten, 2010; Findsen & Formosa, 2011). They must also be in line with today's society and the needs it raises. At the same time, this could increase the overall systematicity and continuity of the implementation of media literacy in older people.

According to the general guidelines of media literacy in Finland, leadership and planning can be considered features of systematic media literacy (Salomaa & Palsa, 2019). When looking at the research results from these perspectives, they do not place much emphasis on, for example, leadership, at least not at the national level. The sub-studies show for the most part that media literacy instructors act alone or to some extent in cooperation with other parties, but no major leadership or cooperation is evident (see, e.g., sub-study II). It seems, based on the sub-studies, that the research and practice of media literacy in older people is currently not being led by anyone, but there is a need for it.

8) Increase cross-sectoral cooperation. When we consider the implementation of media literacy for older people, we often come across the question of who is responsible for it. The development of media literacy cannot be left entirely to the

individual's own responsibility but must also be guided by a wide range of external actors, especially if media literacy is required to cope in society or to carry out certain activities (e.g., digital services) (see sub-study I). Therefore, the present study suggests that we all, regardless of our role (e.g., family member, service provider, healthcare staff), have a responsibility to guide and develop the media literacy of older people, as already mentioned for the fourth design principle (see, e.g., Godfrey & Johnson, 2009; see also Dunning, 2005). According to the research results, the best way to implement guidance would be to do so through cross-sectoral cooperation.

In particular, the first sub-study examined who carried out the reported media literacy interventions and who should organize them in the future as well. The results show several providers, including public libraries, computer savvy students from schools, universities, adult educators, research institutes, seniors' centers, care givers, professionals who work directly with older people, (collaborative) projects, and other community-based settings. In the second sub-study, the roles of family, peers, and professional teachers as media literacy instructors were highlighted. Places familiar to older people were also emphasized in the results, such as libraries and certain organizations (e.g., non-governmental organizations) (see also Strover et al., 2019). The third sub-study adds, for example, the following providers from the perspective of the older people and stakeholders: traditional training organizations, concrete places (e.g., digital point), and service buses (e.g., social service bus). There were, of course, many overlaps in the findings, and while the list is comprehensive, it is not exhaustive. However, the list of providers is a good illustration of the fact that developing media literacies in older people is not the task of a single party but should be carried out by several parties. Therefore, to make best use of the available resources it makes sense to work together across sectors.

Cooperation between media literacy providers was highlighted especially in the third sub-study and emerged in particular from the feedback given by the older people and professionals (see also sub-study I). However, in Finland, the general situation is relatively good; according to Palsa and Salomaa (2020, p. 178): "media education is not tied to a single administrative sector, but is instead a topic addressed to a certain extent in almost all administrative sectors. In the Finnish policy framework, media education is considered broadly and has a relatively established position within policymaking bodies." As we can see, cooperation on media literacy is quite widespread in Finland, but because more cooperation is desired, the question arises as to whether it is done in a sufficiently comprehensive manner or systematically. The research results show that at least systematicity could be increased (see design principle 7). Moreover, another question arises as to whether sufficient work is being done, especially for the media literacy of older people, or whether most is still aimed at children and young people. At least according to previous research and the results of this study, research and practical work should be increased with regard to media literacy in older people (see, e.g., Petranova, 2013; Rasi et al., 2016).

As many providers are already working on improving media literacy for older people, it is important to place more emphasis on this work and to bring media literacy instructors together, thus increasing their cooperation to promote media literacy for older people (see, e.g., sub-study III). This would give older people a wider range of support from different sources and at the same time facilitate the workload of individual support providers when more people take responsibility. Moreover, cooperation would make more efficient use of resources, avoid duplication, and increase the profile of the message conveyed by service providers. Also, a diverse group of older people could be better taken into account, and a wider range of support could be provided according to different needs (e.g., for higher age groups, distance learners, homebound older people, immigrant older people, those living long distances away). Nowadays, cooperation with service providers in different localities is possible, and with digitalization, for example, practices and materials can be made more widely available than just locally. Such extensive cooperation can also facilitate the adoption of practices and materials from different organizations or projects within the public sector, for example.

6 DISCUSSION AND CONCLUSIONS

6.1 Discussion of Design Principles for Media Literacy Geragogy

The eight design principles presented in Chapter 5 are the most important theoretical contribution and outcome of the present study. With these design principles, this study provides new understanding on older people's media literacy education and offers new insights into what kind of media literacy geragogy could support it. According to the design principles, the media literacy geragogy needs to 1) *be based on the older people's own needs*, 2) *approach media literacy holistically*, 3*) use various pedagogical approaches*, 4) *utilize warm and socially skilled instructor(s)*, 5) *support cognitive skills*, 6) *support empowerment*, 7) *be systematic and continuous*, and 8) *increase cross-sectoral cooperation*.

Media literacy geragogy can be defined on the basis of this study as a fine-tuning of the teaching and guidance of media literacy (use, understand, create) in older people according to their needs (see also Aufderheide, 1993; Findsen & Formosa, 2011). Media literacy geragogy places particular emphasis on the needs-based nature of teaching and guidance, where learners are understood as a diverse and heterogeneous group of people (see, e.g., Czaja & Sharit, 2013; Dannefer & Settersten, 201; Castro Rojas, 2018; Rasi, et al., 2019). Media literacy geragogy is also linked to concrete practical work in which older people can be seen as active actors. Media literacy can be developed alone as well as together with other actors, such as with family and peers (see, e.g., Castro Rojas, 2018). In fact, peer-to-peer teaching has been seen as a beneficial approach with older people (Findsen & Formosa, 2011; Formosa, 2012; Xie, 2007), but other pedagogical approaches should also be emphasized according to the needs of older people (e.g., individual and learner-centered pedagogy, formal and teacher-centered pedagogy). According to the design principles, the development of media literacy is supported by one or more warm, socially skilled instructors, whose role is to support the process, but also arouses interest and the courage to learn new things (see also Olsson & Viscovi, 2018). The instructor does not provide information directly to the learner but directs and guides the process through discussion (see also Giannoukos et al., 2015; Olsson & Viscovi, 2018; 2015; Westbrook, 2011). However, according to the design principles, there is not a one-size-fits-all way to develop media literacy among older people; rather, they provide guidelines for its implementation and highlight issues that should be considered (see also Hobbs, 2010).

The design principles highlight two important trends. First, there is a learner-centered trend in the design principles; specifically, some design principles focus mostly on the person being taught. Such design principles are, in particular, *be based on the older people's own needs*, *approach media literacy holistically*, *support cognitive skills*, and *support empowerment*, which are also important aspects in terms of geragogy (see, e.g., Findsen & Formosa, 2011). As said previously, in media literacy geragogy, it is especially important to pay attention to a needs-based approach, which considers, for example, needs, goals, devices in use, and the previous experience of learner, but still implements guidance so that media literacy (use, understand, create) is holistically supported (see, e.g., Aufderheide, 1993; Petranova, 2013; Rasi et al., 2016). After all, a person with media literacy can be considered one who has abilities in all dimensions of media literacy and not only in some of them (see, e.g., Aufderheide, 1993). At the same time, media literacy geragogy understands the possible impairment of the cognitive skills of older people and the importance of empowerment, which are sought to be supported by, among other things, different pedagogical approaches (e.g., peer-to-peer teaching) (see also Formosa, 2012; Petranova, 2013; Xie, 2007). Although these design principles focus more on the learner, they can also be seen as related to some extent to the instructor, such as from a skills perspective. The facilitator needs such skills in order to be able to support the development of media literacy in a needs-based but holistic way, for example, by providing new stimuli from the perspective of different dimensions of media literacy (use, understand, create) (Aufderheide, 1993; see also Ofcom, 2020). This in fact leads to another trend that emerges from the design principles. The design principles of *use various pedagogical approaches*, *utilize warm and socially skilled instructor(s)*, *be systematic and continuous*, and *increase cross-sectoral cooperation* emphasize the instructor's perspective more than that of the learner. According to the media literacy geragogy, the instructor must have certain skills that promote the development of media literacy in older people, such as the use of different pedagogical approaches, the ability to cooperate, and being systematic. The instructor is also expected to have certain types of traits related to, for example, sociality and empathy and be able to create a safe learning environment that is encouraging and allows questions to be asked, for example (see, e.g., Abad Alcalá, 2019; Castro Rojas, 2018; Olsson & Viscovi, 2018).

When looking at the design principles, from the point of view of geragogy and media literacy (use, understand, create), it can be stated that the understanding of these concepts has been the starting point for each design principle, and commonalities with the concepts can be found in all of them (Aufderheide, 1993; Findsen & Formosa, 2011). For example, the following design principles can be considered as particularly important for geragogy: *utilize warm and socially skilled instructor(s)*, *support cognitive skills*, and *support empowerment*. They are emphasized especially because they directly reflect features important to geragogy. In geragogy, the role of

the teacher is emphasized from the perspective that it becomes more of one who acts as a facilitator of learning (Findsen & Formosa, 2011). Also, the instructors can be anyone, a professional or a non-professional teacher, but peer support is perceived as particularly useful because peers may have a better understanding of older people's cognitive abilities than younger generations (see, e.g., Castro Rojas, 2018; Formosa, 2012; Olsson & Viscovi, 2018; Xie, 2007). Understanding and becoming aware of older people's cognitive abilities as part of teaching and learning is also particularly important for geragogy (Abad Alcalá, 2019; Castro Rojas, 2018; Findsen & Formosa, 2011). At the same time, geragogy seeks to empower older people, in particular by increasing their independence through developed skills, from the point of view of maintaining social relations or, for example, improving their quality of life (see, e.g., Blažun, 2013; Eronen et al., 2019; Karavidas et al., 2005).

Lastly, media literacy (use, understand, create) is also the core and goal of every design principle although it is perhaps most prominent particularly in the following design principles: *be based on the older people's own needs*, *approach media literacy holistically*, and *use various pedagogical approaches* (Aufderheide, 1993; see also Ofcom, 2020). As has been mentioned several times, the promotion of media literacy in older people should be needs-based, but it must be developed holistically (see, e.g., Rasi et al., 2016). As the media literacy geragogy emphasizes both a needs-based and holistic development of media literacy, it affects not only the content but also the pedagogical approaches used (see, e.g., Castro Rojas, 2018; Rasi et al., 2019). Different pedagogical approaches should be used to develop media literacy for older people although the results often emphasized, for example, individual and learner-centered as well as formal and teacher-centered pedagogies. From the point of view of media literacy, for example, the discussion is central, and the answers are not given directly to the learner but rather the learner is active and is guided to the solution of the problem through discussion and questions (see also Westbrook, 2011), which can also be thought of as emphasizing the design principle of: *utilize warm and socially skilled instructor(s)*.

6.2 Overall Evaluation and Methodological Considerations of the Study

This section evaluates the validity and credibility of the present study particularly through triangulation. The main purpose of triangulation is to critically evaluate a study from four different perspectives of *theory*, *methods*, *research data*, and *researcher* and thus increase the reliability of the study (Denzin, 1978). It must first be stated, from a theoretical triangulation point of view, that the present study is a deductive study that has been strongly guided from the very beginning by the traditionally understood definition of *media literacy* (use, understand, create) (Aufderheide, 1993; see also Ofcom, 2020). The application of the concept has been possible due

to its relatively broad and general definition, as indicated by the three dimensions of the concept instead of, for example, 11 dimensions (Ptaszek, 2019). Moreover, although media technologies have changed since the definition of this concept (e.g., robotics), it is still perceived as suitable and applicable to today's needs, as evidenced, inter alia, by the use of the related concept of "digital competence" in the study of robotic medication-dispensing services among older people (see Airola & Rasi, 2020; see also Suto, 2013). Due to the appropriateness of the concept of media literacy in this study, it has played a key role in setting and achieving goals, and the concept is used systematically throughout the dissertation. The concept is also reflected in sub-studies, such as in the research questions, data analysis, and design principles, as already discussed in the previous chapter (see section 6.1. Discussion of Design Principles for Media Literacy Geragogy).

According to theoretical triangulation, the topic and results should also be viewed from other theoretical perspectives, such as *older people* (Lee et al., 2018) and *geragogy* (Findsen & Fromosa, 2011), which were also discussed to some extent in the previous chapter (Denzin, 1978). In general, the inclusion of these aspects in this study has increased the understanding of the aging population and their diversity as well as the implementation of their teaching and guidance, which has been highly important. Especially the importance of geragogy alongside media literacy in this process needs to be emphasized because without it the development of a new concept of *media literacy geragogy* and the design principles that support it would not have been possible. The concept of geragogy has also brought many considerable perspectives to this study, which have made it possible to achieve the set goals. All in all, the selected theories have been seen in this study as valid and mutually supportive.

From a methodological triangulation point of view, the present research is a qualitative DBR study, consisting of three separate sub-studies (Design-Based Research Collective, 2003). Together, sub-studies I–III represent the first cycle of the DBR, during which the design principles for media literacy geragogy and the new course have been designed. However, the use of the DBR method in the present study was not completely clear at first but was refined during the process. Based on the findings of the literature review and the aims of the present study (theoretical and practical), the use of the DBR method was justified. The choice of method was confirmed during the second sub-study and was further strengthened during the process. At the end of this study, the choice seemed relevant and supported the progress of the study. Moreover, the DBR study is in line with the IkäihMe Project, which was also a development project.

Although this study is primarily a qualitative study, it was supplemented with a small amount of quantitative data (questionnaire for older people) in the second sub-study. In particular, according to Wang and Hannafin (2005, p. 17): "Qualitative documentation methods are often especially useful in design-based research" (see

also Zheng, 2015), which supports the choices in this study. Moreover, in the sub-studies, data were collected in different ways and through different methods. The first sub-study reviewed previous empirical studies, which also increased the understanding of the topic from a theoretical point of view. In the second sub-study, a questionnaire for older people was carried out, and the older people and professionals designed an ideal media literacy training program for hypothetical older people (i.e., case exercise). In the third sub-study, a written design for a media literacy intervention for older people and a presentation based on it were collected from teacher students as well as feedback from older people and professionals on the student presentations. Therefore, it can be stated that from the methodological point of view of triangulation, different data acquisition methods have been used in this study (Denzin, 1978).

As noted earlier, the research data in the present study were collected through a variety of sources (systematic literature review, case exercise, questionnaire, written assignment, presentation, written and oral feedback) and from different target groups (empirical studies, older people, professionals, teacher students), which can be seen to increase reliability from a data triangulation perspective (Denzin, 1978). Although the sub-studies complement and support each other, some shortcomings can still be found in this study. For example, a shortcoming of the first sub-study can be seen in its limitation of the research data to the beginning of 2019 since much has happened in the field of media literacy since then (e.g., fake news) and the pandemic emerged (Brashier & Schacter, 2020; Guess et al., 2019). In the second sub-study, the questionnaire could have been supplemented, for example, by increasing the number of open-ended questions as, at least according to the results of the questionnaire, some older people reported a challenge in assessing media literacy on a Likert scale. The topics of the questionnaire could also have been expanded more from the perspective of media literacy dimensions (use, understand, create), such as from the perspective of critical analysis and understanding in relation to the meanings behind advertisements (Aufderheide, 1993; see also Ofcom, 2020). Furthermore, the questionnaire could have been collected only after the case exercise as it may have had a small impact on the outcome of that task. In the third sub-study, the research data were missing two presentations from the teacher students because the presentations were requested only after the evaluation workshop but should have been requested before that. However, this did not significantly affect the research results as all the teacher students returned the written assignments on which the presentations were based. In general, the data collection could, for example, have been supplemented by interviews (e.g., individual or group, thematic), which would have allowed for a more in-depth data collection.

The overall aim of DBR is to produce theoretical understanding and to develop practice (see, e.g., Design-Based Research Collective, 2003; McKenney & Reeves, 2013). This dual aim has been achieved through three sub-studies, theory, and the

DBR method, which have provided theoretical understanding—in other words, design principles for media literacy geragogy—as well as developed practice by designing, piloting, and redeveloping the "Older People, Media Education, and Facilitation of Learning" course in teacher education at the University of Lapland (Design-Based Research Collective, 2003). The success of achieving the set goals is thus demonstrated by the development of concrete design principles that are easily transferable to the field for the benefit of those who design and support older people's media literacy (e.g., teacher education) (see also Design-Based Research Collective, 2003; Wang & Hannafin, 2005) as well as the new blended learning course that was added to the study guide for teachers' pedagogical studies at the University of Lapland in 2019 (Faculty of Education, Continuing education unit in the field of teaching and education, 2020). However, one of the challenges of DBR is "refining locally valuable innovations and developing more globally usable knowledge for the field" (Design-Based Research Collective, 2003, p. 7). The local dimension has been achieved in this study, but the global effects will not be properly understood until after this study. However, the dissertation and sub-studies have been reported in English, which promotes the dissemination and applicability of information also internationally.

It is important to note that development work was not undertaken alone but also took into account the perspectives of the other authors from the sub-studies and the teachers in charge of the course (see also Barab & Squire, 2004). This has strengthened the researcher triangulation in this study (Denzin, 1978) by combining the expertise of different parties to achieve a common goal. For instance, most of the research data were analyzed in collaboration with the other authors of the articles (sub-studies I & III), and the course was designed in collaboration with the teachers in charge, which increases the reliability and accuracy of the results (Cobb et al., 2003). I have thus worked closely with other researchers and teachers as well as balanced between the roles of researcher, designer, and project worker. However, it is common in the DBR approach to need to balance between different roles (Wang & Hannafin, 2005; see also Barab & Squire, 2004). Reciprocally, it is also important to emphasize my own contribution to the present study, which has been paramount in formulating the final outcomes and conclusions. For this purpose, I have summarized and synthesized the results of the three sub-studies that led to the design principles for the media literacy geragogy. I have also been actively involved in each sub-study and served as the first author in two of them (more detailed responsibilities by sub-study can be found in Chapter 4). Overall, I have been a key operator in the implementation of the dissertation and was responsible for its progress.

Extensive stakeholder work has been carried out in the present study, which has played a key role in obtaining the results. The following participants have been involved in the implementation of the study: older people, professionals who work with older people, and teacher students. The participants' most significant

contribution to this study was participation in the design, implementation, and evaluation phases of the DBR study, on the basis of which theory and practice have been developed (see, e.g., Design-Based Research Collective, 2003). However, the participants were not involved in the elaboration of the final design principles; rather, I produced them on the basis of the results and conclusions obtained from the three sub-studies. It would have been important to go through the final principles together with the participants, but unfortunately the remaining time and resources were insufficient for that. The participants not being fully involved in all the different phases of the DBR can be considered one of the shortcomings in the implementation of the DBR study (Wang & Hannafin, 2005).

From an epistemological and ontological point of view, however, it has been important for the dissertation to include older people, professionals, and teacher students. The participants have made it possible to approach and build information from a distance, which would not have been possible without them (see also Barab & Squire, 2004). If the information had been produced by the researcher alone, the authenticity of the information could have been jeopardized as I am not an older person and thus lack personal experience of the subject (although I have followed the situation through the older people close to me). However, I have some experience with media literacy as I have studied the subject at university and worked on it for several years. Thus, I have been able to utilize my previous education and work experience in this regard in conducting this study.

Despite broad and close stakeholder engagement and cooperation between other practitioners in the field, it is important to note that the target group and principles in this study can still be considered somewhat limited and thus also specific. For instance, in the last two sub-studies, the participants came mainly from two Finnish cities (Rovaniemi & Helsinki) and focused only on certain types of older people, which is why the study lacked higher age groups and homebound older people, among others. Therefore, it is important for the study to emphasize the fact that although the aim of the study was to reach as heterogeneous a group of older people as possible, it can still be assumed that the sample consists of active older people with at least some interest in the topic. For this reason, it is difficult to declare large and generalizable conclusions although they can serve as good guidelines for future research, and the results can be part of something of greater cultural significance. From this perspective, this study is a good opening for discussion, especially in the field of media education and teacher training.

Another noteworthy fact is that only one DBR cycle was implemented in this study, when, according to the nature of the DBR approach, it would have been natural to implement multiple cycles and collect more research data from them (Design-Based Research Collective, 2003; Wang & Hannafin, 2005; Zheng, 2015). However, the inclusion of a second cycle in this study was not possible partly because the implementation of the course is aligned with the university's work and teaching

plans, according to which the next implementation of the course would not have started until December 2020. For the purposes of the present study, the window of implementation for the course was too late as the third sub-study had already been submitted to an academic journal for the first time in the summer of 2020 on top of the fact that the writing of the Introduction part of the dissertation had already begun. On the other hand, this can also be considered as a strength of this DBR study as focusing on one cycle allowed research to be performed at each stage of the cycle and was reported in different research publications. In general, research results are reported only after the analysis phase, unlike in this study, making it strongly research-based.

Finally, it can be stated that with different data collection methods, and if the study had been performed by someone other than me, the results could also have been slightly different in some respects. Thus, the conduct of qualitative research is slightly influenced by the researcher's interpretations as well as history and agency based on the social context even if (s)he strives to be objective. However, by identifying these issues, the study has sought to highlight the most significant research results, be objective, and document the cycle phases carefully to increase reliability and legitimacy (see, e.g., Design-Based Research Collective, 2003; Guidelines of the Finnish Advisory Board on Research Integrity, 2012). Furthermore, the results and the process have been continuously analyzed and reflected upon, not only at the end of the process (Saaranen-Kauppinen & Puusniekka, 2006), which increases the reliability of this study. For example, the cultural context in the research field has been reflected in relation to other research (e.g., compared to Castro Rojas's study [2018]), and it has been stated that a similar study has not been conducted before (see section 2.3 Media Literacy and Geragogy).

6.3 Ethical Considerations of the Study

The ethical evaluation has adhered to the scientific practices of the Finnish National Board on Research Integrity (TENK, 2019). Firstly, it can be stated that the present study is constructed from three separate sub-studies that together form an article-based dissertation. From an ethical point of view, this means that each study has gone through a peer review before being accepted to or published in a scientific journal. In addition, the two supervisors of the dissertation from the University of Lapland and two dissertation examiners from other universities have reviewed the study and given feedback on it, increasing both its methodological and ethical reliability. Secondly, all the sub-studies were conducted as part of the IkäihMe Project (2018–2021) although the data collection of the first sub-study was started in 2016 (see Chapter 4 Research Methodology). As this study was part of the project, for example, the roles of the members of the research project, such as responsibilities, authorship principles, and rights, were examined specifically at the beginning of the

project but also during it. In particular, a discussion related to authorship took place with the project members in connection with publications (e.g., articles, conference proceedings) to ensure ethical treatment. Furthermore, the implementation of the project requires certain actions, such as a description of the progress to the funder and the monitoring of its progress compared to the project plan. It can be stated that the progress of the project and this research has taken place as planned and has also been reported to the funder (TENK, 2019).

The conduct of the research is closely related to data protection issues, which ensure the safe storage of the researched and collected data (TENK, 2019). Therefore, this issue was addressed at the very beginning of this study and the IkäihMe Project, which is why a Data Protection Statement was prepared and submitted to a lawyer at the University of Lapland. The Data Protection Statement explains, among other things, what kind of research the project intends to do and how the research data are collected as well as how they are used and stored. In this study, data were collected in a variety of ways, such as written outputs (e.g., written assignments, feedback), presentations (e.g., PowerPoint), and recordings (e.g., audio recordings), as also mentioned in the Data Protection Statement. Moreover, the collected data have been stored behind locked doors, and the electronic material has been stored behind several passwords on a work computer (see, e.g., TENK, 2019). The research data have not been distributed to outsiders as only project members have had the opportunity to process them. It should be noted that only the data from the systematic literature review were stored on the password-protected drives of all three authors of that article, but the research data from the other two articles were located only on my computer. This is because I conducted the second sub-study alone, and sub-study III, which was carried out in collaboration with the other authors, was primarily my responsibility, including the analysis of the research data, although the results were later discussed jointly.

A total of 60 participants participated in the present study, whose participation has been on a voluntary basis. Participants have had the opportunity to withdraw from the study at any stage of the process although none of the participants directly expressed a desire to withdraw, and they have been greatly cooperative (TENK, 2019). However, there were some changes in the number of participants as the last evaluation workshop in Rovaniemi (sub-study III) did not, for example, have the same number of older people as the participatory creative workshops (sub-study II) although all of them had been invited. In this respect, it can be noted that some degree of voluntary withdrawal took place during the research. Furthermore, prior to any collection of research data, relevant factors such as the background of the research, what information was to be collected, and what it was to be used for, were explained to the participants. The participants were also given the opportunity to ask clarifying questions. Moreover, for this study to follow sound scientific practices, it was essential to collect informed consents as well (TENK, 2019). The informed

consents were collected in writing and/or orally for the last two sub-studies (see, e.g., Appendix 1). In the present study, it has also been important to protect the anonymity of the participants at every stage of the research process. In order to ensure anonymity, the set of respondents has been described in the sub-study reporting using specific codes instead of real names (sub-study III).

As we have seen, good scientific practices require a number of important actions, for example, in the collection, storage, and reporting of the research data but also in terms of behavior that values and respects the participants (TENK, 2019). This is particularly important for this study as the participants included older people, who can be considered a somewhat vulnerable target group (TENK, 2019). The vulnerability of the older people is particularly enhanced by their chronological age, which ranged from 67 to 87 in this study, and may thus increase, for example, the potential for a decline in cognitive skills. However, in the study, the older people demonstrated cognitive abilities (e.g., through their own behavior, freedom of expression, and actions) that did not affect or specifically reduce their ability to understand the voluntary nature of their participation in the study or, more generally, their role in the study. The matter was considered throughout the study and, if radical changes were to have taken place, for example in terms of participants' cognitive abilities, between the second and third sub-studies, they would have been addressed. Thus, I have respected the human dignity and self-determination of the target group as well as protected their vulnerability (TENK, 2019).

Finally, I have followed sound practices in the scientific community, such as caution and honesty at all stages of this study. This has been reflected in the fact that the work of other researchers has been respected, and their work has been referred to in the appropriate way. I have also understood the basic nature of the research, which must be transparent and open, which is what I have also strived for in my own research (Guidelines of the Finnish Advisory Board on Research Integrity, 2012). Furthermore, from an ethical and DBR perspective, it is important that older people have been allowed to take part in a study that concerns themselves, which has been limited, especially with regard to research into their education and learning (see Boulton-Lewis, 2010). Another option would have been to develop a media literacy geragogy on a research basis without older people and their opportunity to express their perspectives, but in this study, the involvement of older people in particular was an important part of the research. Overall, it can therefore be concluded that good scientific practices have been followed in the conduct of the present study (see Guidelines of the Finnish Advisory Board on Research Integrity, 2012; TENK, 2019).

6.4 Implications and Future Directions

The present study has both theoretical and practical implications for practice and policy (see, e.g., Design-Based Research Collective, 2003). Firstly, this study offers empirical findings regarding new knowledge about older people's media literacy geragogy that has enabled the development of practical design principles. In fact, this study introduces for the first time the concept of *media literacy geragogy*, which yielded a total of eight design principles (see Chapter 5). With this new knowledge, the present study develops and is particularly beneficial in the fields of Finnish media education and adult education by expanding the media literacy pedagogy to better address the target group of older people. Although the main emphasis remains in the Finnish context, the results of this study can also be applied and utilized internationally. Moreover, the findings will also serve as a guide for future research.

The developed knowledge and the design principles are aimed at supporting particularly actors in the field who design and provide media literacy for older people, such as family, peers, senior centers, adult education organizations, universities of the third age, schools (with computer savvy students), civic colleges, non-governmental organizations, providers of various services (e.g., social care and healthcare), libraries, associations, businesses (e.g., banks), religious communities, decision makers, and news media as well as museums and cultural and art institutions. The abovementioned parties can utilize the developed design principles for their own activities by evaluating and developing existing activities and services or creating new ones on the basis of the new knowledge. Moreover, this study benefits all its readers who want to increase their own understanding of media literacy geragogy in older people or, more generally, to broaden their understanding of media literacy more comprehensively to cover the perspectives of older people in addition to other target groups.

This study also supports knowledge-based decision making as it serves as an opening for dialogue between decision makers in society and the scientific community. Various authorities, decision makers, organizations, and other parties that play a significant role in promoting Finnish media literacy can benefit from the research results and influence the development through their own actions. One concrete measure would be that, in the future, the Finnish Society on Media Education and National Media Education Policy would extend the guidelines more widely to include older people on the basis of this study. According to this study, guidelines should provide more targeted proposals for action that support the objectives (e.g., how, where, what, by whom) as so far the activities of the abovementioned bodies have increasingly focused on children and young people or working-age adults (see Salomaa & Palsa, 2019). Such a procedure would be important not only in terms of equality but also in that it would at the same time make an exception to "top-down" processes in media literacy; as Forsman (2020, p. 67) states: "Today, media literacy

seems to be more of a top-down process in which policy makers and authorities propose their 'curriculums,' which are defined by loose concepts and filled with frameworks, indicators, modules, and so forth [...]."

Secondly, the present study is a new opening for discussion in the field of Finnish teacher education with an emphasis on adult education. In this study, shortcomings were found in the teachers' pedagogical studies in terms of older people's media literacy as they completely lacked this perspective. The teachers' pedagogical studies covered only a group of working-age adults or younger age groups, not the older population. It is not entirely clear from where these shortcomings stem although it is well known that the content of media literacy in particular has been slow to be incorporated into teacher education (see Meehan et al., 2015; Salomaa et al., 2017). The phenomenon itself is more widespread as teacher education in general, not just teachers' pedagogical studies, is strongly focused on primary education, and less attention is paid to the adult and older populations. Moreover, there are no teacher studies focusing on adult education although competent instructors and teachers play an important role in providing equal opportunities for the development of media literacy at all ages (Vuojärvi et al., 2021). From the point of view of lifelong learning and continuous learning, teacher training does not fully meet the set guidelines (Vuojärvi et al., 2021: see also Finnish Government, 2020; Kinnari, 2020). For this reason, this study challenges the debate on better coordination of teacher education with the themes of lifelong learning and continuous learning, which also emphasize, according to Vuojärvi et al. (2021), that older people's teaching and guidance also takes place in contexts other than those leading only to a degree or accumulating credits (see also Petranova, 2013). In order to guarantee high-quality opportunities for lifelong learning and continuous learning, more attention and action needs to be aimed in this direction.

With the new theoretical understanding of this study, teacher studies at the University of Lapland has developed a new blended learning course on "Older People, Media Education, and Facilitation of Learning," which has been included in the curriculum since 2019. For the first time, the perspective of older people has been included in the teachers' pedagogical studies, especially with regard to media literacy. The direction of the development of teacher education achieved through this study is the right, but the situation is not remedied by the fact that the topic is currently only covered in small part of teacher education, which is why developments should be made more broadly and systematically in the entire field of teacher education. For this purpose, the present study provides a good opportunity for other universities, and in particular for teacher education, to make use of the knowledge and course concept created in this study according to their own activities. The course concept and the knowledge created in this study should be extended to other disciplines in the future. A similar or at least applied course implementation could also be integrated into the field of social work or gerontology education, where

older people are already an essential part of the target group of study. At the same time, this means that the course could also be implemented in higher education contexts other than just universities, such as the University of Applied Sciences (see also Tullo et al., 2016). However, the present study offers no reason to limit the context to the abovementioned training organizations as it is possible to extend the course and knowledge to other organizations that provide education. In this respect, this study challenges all education providers and designers to look at the existing education provision also in terms of the subject matter of the study.

As this research is only paving the way and laying the foundations for research and practice in media literacy geragogy, more research and practical work is needed in the future. The next step would be to implement a second DBR cycle, where more information would be collected on course implementation and the design principles developed (see Design-Based Research Collective, 2003). It would be important to collect research data from the target groups already included in this study but to also include a wider range of educational organizations and collaborators working with older people (e.g., University of Applied Sciences) as well as older people who have so far been excluded from this study. Therefore, in the future, it would be important to expand and specify the target group of older people to include at least the following groups: the oldest old (i.e., 85+), older people with a weaker socio-economic status, immigrant older people, older people living in sparsely populated areas, lonely older people, older people with disabilities and weaker health status, and older people with advanced degrees (see, e.g., Czaja & Sharit, 2013; Lee et al., 2018; Röyskö, 2016). It may also be necessary to carry out research in which older people are further divided into different age groups, such as youngest-old, middle-old, and oldest-old (Lee et al., 2018), as well as to look at differences and similarities between groups in terms of media literacy. With this, we could increase our understanding and provide more targeted guidance to support older people's media literacy, such as in the oldest-old age group. In the end, it is also important to recall that in the future, more skilled media users with better media literacy are also likely to retire, which is why practical work and research must remain up to date in this respect as well.

In the future, it would be important to pay attention to older people's own creative production and understanding of various media texts and content as well, which were particularly emphasized in the first sub-study and have been present since then through the dissertation. Unfortunately, neither of these dimensions of media literacy was specifically highlighted in the research results other than their low incidence. Therefore, more practical work and research on older people's own production, especially in relation to producing and sharing one's own life histories, should be carried out in the future (see also Gall, 2014). Activities in the area of understanding should also be stepped up, for example, by organizing various workshops and courses in which participants learn to identify fake news, disinformation, and propaganda or to develop e-health and health media literacies (see, e.g., Eronen et

al., 2019; Guess et al., 2019; Brashier & Schacter, 2020). Although in the future special attention should be paid to the dimensions of creating and understanding media literacy, it should be noted that, due to the changing society and devices as well as the heterogeneity of older people, there is always a need to develop their use of digital technologies and media. At the same time, these findings allow for more diverse data collection as in the future it could be useful to combine different data collection methods in addition to existing dissertation research methods, such as research on older people's own production (e.g., media diaries), individual and group interviews, and, for example, more quantitative research through surveys (see also Cornér, 2020; Hobbs, 2010).

The present study also showed the need to examine more closely the following pedagogical approaches, especially in terms of older people's media literacy: intergenerational learning, peer-to-peer teaching, playful learning, game-based learning, blended learning, and online learning. For example, intergenerational learning and peer-to-peer teaching were perceived as somewhat successful approaches in this study, but based on the research results, they need to be critically examined further as the amount of previous research on these is relatively small (see also Schmidt-Hertha, 2014). No indications of playful and game-based learning were found in this study, nor was there much evidence of blended and online learning. Taking these into account in the future would be important because playful learning can increase older people's creativity and cognitive spontaneity (Rasi et al., 2016), while "Online learning is particularly beneficial to all older adults but especially those living alone, widowed, in rural environments, or having mobility restrictions" (Findsen & Formosa, 2011, p. 110). Moreover, the creative pedagogy was not sufficiently in depth, so there is a need for further research in this area.

This study also raises the broader need to examine the media literacy of older people in general and not just from the perspective of their teaching and guidance. As previous empirical studies have shown, research and practical actions for media literacy in older people are not yet as widespread as those in children and young people (Petranova, 2013; Rasi et al., 2016). Therefore, more research and practical work is needed to determine, for example, the state of media literacy in older people. At the moment, the digital skills survey by the Digital and Population Data Services Agency (2020) is not sufficient to describe it, which is why the implementation of a media barometer, for example, is needed (see also Forsman, 2020; Rasi et al., 2016).

The issue of media literacy in older people is important to look at more broadly at the societal level as well. For example, society and the market economy should recognize older people as an important consumer community, which is still dominated by younger generations, as it could increase the participation and equality of older people in society. In fact, a closer look at the issue of equality from the perspective of older people shows that it is currently in conflict with society's equality law and expectations that all people use digital services (e.g., e-banking),

when, in reality, not everyone has access to them, such as due to a lack of equipment or skills. According to Pirhonen et al. (2020, pp. 7–8): "In Finland, older adults may choose to live without smart phones or computers, but running errands requires engagement with digital devices and the internet – or going through much more complicated processes, if one tries to avoid technology use," which already well reflects the role of digitalization in the daily lives of Finns. In this respect, this study suggests that digital equality needs to be further developed, which can also be supported by the results of this study. Society must not only demand certain skills from citizens but must also provide sufficient assistance and tools to develop them as needed so that groups at risk of falling behind are not completely excluded from society (see also Petranova, 2013). To this end, this study provides concrete ways to support the development and guidance of media literacy among older people.

The present study supports also the EU's principles of lifelong learning, including the provision of high-quality education for all ages (Council of the European Union, 2018). From this perspective, the promotion of media literacy among older people is seen as having many beneficial effects, such as the safety of older people in the use of digital technology and media. Increased media literacy can increase participation in society and democracy as well as support the role of the active citizen, which in turn can reduce social exclusion and perceived loneliness that have been firmly associated with the population of older people and that COVID-19 has further emphasized (Council of the European Union, 2018; Kotwal et al., 2021). Moreover, as media literacy increases, older people can become more independent, and the need for outside assistance in everyday matters, for example, can decrease, which in turn saves resources and can increase the empowerment and personal fulfilment of older people. With just a few examples, media literacy is seen as playing an important role in the lives and wellbeing of older people, which society should also support and not just set expectations, as the effects are also reflected there.

In conclusion, the outcomes of this multidisciplinary study, which has successfully combined media education, adult education, and educational gerontology, have expanded the media literacy pedagogy theoretically and conceptually to better take into account media literacy in older people. Eight design principles for media literacy geragogy have been presented as the main contribution of this study. In that regard, the study responds, for example, to Forsman's (2020, p. 67) argument that "In terms of pedagogics, there is a need for a renewal of media literacy methods." Furthermore, the research findings have concretely developed teacher education practices and content in terms older people's media literacy, which has led to the inclusion of a new course in the teacher education curriculum. The present study can be considered groundbreaking in this sense and thus fills a gap in the research field although some shortcomings can be found in the research. Therefore, future studies should take into account the shortcomings of the present study and further develop this topical issue.

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APPENDICES

APPENDIX 1. Example of a model for written informed consent (sub-study II). Translation to English by the author.

Our research group conducts research on the media education needs of older people as part of the IkäihMe Project coordinated by the University of Lapland in cooperation with the University of Helsinki (for more information about the project, see https://bit.ly/2UvjjTn). The project will produce and pilot a research-based digital study module for media education for older people, which, in addition to universities, can be used by non-formal adult education institutions and adult education organizations.

For the research, we ask you for permission to videotape/record and use all the data of the design workshop to be held on **Thursday, March 28, 2019 from 9–12:30** in Rovaniemi at the Korundi Cultural House of Culture. Moreover, we ask for permission to use the completed questionnaire as part of our research. We treat all material confidentially in accordance with the EU Data Protection Regulation (2016/679) and in such a way that the participant's identity is not revealed in the research reports. Participation in the study is completely voluntary, and you can withdraw from the study at any time.

We will be happy to answer any questions you may have and provide more information about the study!

Sincerely, Research Liaison Officers,

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I have been informed of the study, and I give the researchers permission to use the data as described:

Yes _____

No _____

First name: _____

Surname: _____

Age (years): _____

Place of residence: _____

Telephone number: _____

Email address: _____

Place and time: _____

Signature: _____

APPENDIX 2. The questionnaire for older people for creative participatory workshops (sub-study II). Translation to English by the author.

IkäihMe

The aim of this questionnaire is to learn about the digital skills and educational hopes of older people. The results of the questionnaire will be used to promote the media education project for older people (IkäihMe) funded by the Ministry of Education and Culture and coordinated by the University of Lapland.

The results will be taken into account when designing a research-based study module related to media education for older people for the teachers' pedagogical studies at the University of Lapland and the University of Helsinki. The study module is also produced for the free use of adult education organizations and labor colleges.

The research results are presented in scientific publications, conferences, university teaching, and, if possible, in various traditional media and online media. We treat all material confidentially in accordance with the EU Data Protection Regulation (2016/679) and in such a way that the participant's identity is not revealed in the research reports. Participation in the study is completely voluntary, and you can withdraw from the study at any time.

We will be happy to answer any questions you may have and provide more information about the study!

You can also visit our website at:
https://www.ulapland.fi/FI/Kotisivut/IkaihMe-hanke, or
Facebook page: https://www.facebook.com/ikaihme/ and follow us on
Twitter @IhmeIka

Sincerely, Research Liaison Officers,

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Basic information

1. **Age**

2. **Domicile**

3. **Education (mark the highest one)** *Mark only one oval.*

- ◯ Elementary school
- ◯ Grammar school
- ◯ Comprehensive school
- ◯ High school
- ◯ Secondary education (e.g., vocational qualification)
- ◯ College (e.g., polytechnic)
- ◯ Higher education (e.g., Master's, M.Sc.)
- ◯ Doctoral degree
- ◯ Other:

4. **Profession (during working life or current)**

5. **Gender** *Mark only one oval.*

- ◯ Male
- ◯ Female
- ◯ Other:

6. **Work situation** *Mark only one oval.*

- ◯ Full-time work
- ◯ Part-time work
- ◯ Part-time pension
- ◯ Retirement
- ◯ Sick retirement
- ◯ Other:

7. Living situation *Mark only one oval.*

- ◯ Living alone
- ◯ Living with a spouse or partner
- ◯ Living in a service house or nursing home
- ◯ Several different people live in the same household

Digital skills

Evaluate your own skills by marking each statement as to how true it is in your case on a scale of 1 to 5. The questionnaire was created by applying the digital skills measure of Van Deursen, Helsper, and Eynon (2014).

8. Skills related to use. 1 = not true at all, 2 = not very true, 3 = I can't say, 4 = mostly true, 5 = completely true. *Mark only one oval per row.*

	1	2	3	4	5
I can save the picture I found on the Internet.	◯	◯	◯	◯	◯
I can change my private settings (e.g., Facebook).	◯	◯	◯	◯	◯
I can use programming language.	◯	◯	◯	◯	◯
I can open downloaded files.	◯	◯	◯	◯	◯
I can use keyboard shortcuts (e.g., CTRL + C for copying or CTRL + S for saving).	◯	◯	◯	◯	◯
I can open a new tab in a browser.	◯	◯	◯	◯	◯

9. Information and browsing skills. 1 = not true at all, 2 = not very true, 3 = I can't say, 4 = mostly true, 5 = completely true. *Mark only one oval per row.*

	1	2	3	4	5
I find it easy to check if the information I found on the Internet is true.	◯	◯	◯	◯	◯
I find it easy to choose the most appropriate keywords for Internet searches.	◯	◯	◯	◯	◯
I think it is easy to find the page I have previously visited.	◯	◯	◯	◯	◯
It is easy for me to determine if I can trust the website I have found.	◯	◯	◯	◯	◯
Sometimes I end up on the website with no idea how I got there.	◯	◯	◯	◯	◯

10. Social skills. 1 = not true at all, 2 = not very true, 3 = I can't say, 4 = mostly true, 5 = completely true. *Mark only one oval per row.*

	1	2	3	4	5
I know what kind of content can and cannot be shared on the Internet.	◯	◯	◯	◯	◯
I can remove a person from my contacts.	◯	◯	◯	◯	◯
I know in what situation I can share information on the Internet and in what circumstances I cannot.	◯	◯	◯	◯	◯
I can behave on the Internet as the situation requires.	◯	◯	◯	◯	◯
I can change sharing settings to who can see what I share (friends, friends of friends, everyone).	◯	◯	◯	◯	◯

11. Creative skills. 1 = not true at all, 2 = not very true, 3 = I can't say, 4 = mostly true, 5 = completely true. *Mark only one oval per row.*

	1	2	3	4	5
I can share video or music content I create online.	◯	◯	◯	◯	◯
I can edit or make simple changes to content on the Internet that someone else has created.	◯	◯	◯	◯	◯
I know what kind of licenses or copyrights apply to content on the Internet.	◯	◯	◯	◯	◯
I can create something new from videos or music that I found on the Internet.	◯	◯	◯	◯	◯
I can design a website.	◯	◯	◯	◯	◯

12. Application skills. 1 = not true at all, 2 = not very true, 3 = I can't say, 4 = mostly true, 5 = completely true. *Mark only one oval per row.*

	1	2	3	4	5
I can install application for mobile devices (e.g., smartphone, tablet).	◯	◯	◯	◯	◯
I can keep track of how much it costs to use a particular application.	◯	◯	◯	◯	◯
I can buy things through the application.	◯	◯	◯	◯	◯

13. Mobile device skills. Which of the following things you can you do on your smartphone or tablet? 1 = not true at all, 2 = not very true, 3 = I can't say, 4 = mostly true, 5 = completely true. *Mark only one oval per row.*

	1	2	3	4	5
I can turn off sharing my location (e.g., Facebook or Google Maps).	⬭	⬭	⬭	⬭	⬭
I can connect to a WiFi network (wireless network).	⬭	⬭	⬭	⬭	⬭
I can turn off push notifications for different applications.	⬭	⬭	⬭	⬭	⬭
I can keep the same files, contacts, and applications on all the devices I use (e.g., smartphone, tablet, computer).	⬭	⬭	⬭	⬭	⬭
I can block pop-ups that promote paid apps, games, or services.	⬭	⬭	⬭	⬭	⬭
I can protect my smartphone with a PIN or a display pattern.	⬭	⬭	⬭	⬭	⬭
I can update my status on the social media site I use the most.	⬭	⬭	⬭	⬭	⬭
I can find information on how to use my smartphone safely.	⬭	⬭	⬭	⬭	⬭
I can compare similar applications and choose the most reliable one.	⬭	⬭	⬭	⬭	⬭
I can take a picture or video on my smartphone and share it on social media.	⬭	⬭	⬭	⬭	⬭

The need for training and guidance

What needs do you feel you have for developing your digital skills? Where would you like to get guidance or training? Reflect on your needs in relation to the areas of digital skills you have just evaluated. From the previous sections, circle the digital skills areas where you would like to receive guidance or training.

Feedback on the questionnaire

Rating on a scale of 1–5 how you have experienced filling out the questionnaire.

14. Answering this form was for me… *Mark only one oval.*

	1	2	3	4	5	
Really hard	⬭	⬭	⬭	⬭	⬭	Very easy

15. I think the layout of the questionnaire was clear. *Mark only one oval.*

	1	2	3	4	5	
Not true at all	◯	◯	◯	◯	◯	Totally true

16. The questions on the questionnaire were clear and understandable. *Mark only one oval.*

	1	2	3	4	5	
Not true at all	◯	◯	◯	◯	◯	Totally true

17. What was good or bad about the questionnaire? What other feedback would you give to researchers on the questionnaire?

Willingness to participate in research in the future

Only fill in the parts of this section if you want to be involved in the research as a target group in the future as well, and you may be contacted when collecting additional material.

18. I may be contacted when collecting additional material. *Mark only one oval.*

- ◯ Yes
- ◯ No

19. First name

20. Surname

21. Telephone number

22. Email address

THANK YOU FOR ANSWERING THE QUESTIONNAIRE!

APPENDIX 3. Four hypothetical older people for the case exercise on creative participatory workshops (sub-study II). Translation to English by the author.

Name: Anneli
Age: 78
Family: Living alone/widow, two children (the other lives in the same locality), grandchildren and the rest of the relatives live mainly in other localities.
Residence: Sparsely populated area.
Technology use history: Anneli's adult child pays bills through online banking on her behalf and takes care of other online affairs (Anneli follows next to her and sometimes also tries with her child's guidance). Anneli has just received her own tablet, which she mainly uses with the help of her children and grandchildren. Anneli usually uses a phone with keys to make calls and sometimes to send short messages. Otherwise, Anneli likes to watch TV and listen to the radio and read magazines.

Name: Eino
Age: 67
Family: Wife, children, and grandchildren and a dog.
Residence: The metropolitan area.
Technology use history: Reading the news and following the stock exchange are part of Eino's daily program. The news is followed by TV, radio, magazines, tablet, and smartphone. Sometimes Eino also makes good discoveries on the Tori.fi website, which he likes to browse. The couple has a dog that they both like to photograph. Eino sends pictures of his dog to his loved ones and sometimes also makes them into photographs.

Name: Aino
Age: 72
Family: Husband, children, and grandchildren all over Finland/the world.
Residence: A small town in northern Finland.
Technology use history: Aino lives with her husband in an apartment building. Aino is a passionate follower of sports, which she mainly watches on TV and the computer. With her husband, Aino sometimes makes Skype calls to her grandchildren, who live abroad. The couple recently acquired smartphones and, for example, WhatsApp has been used to some extent along with other basic functions.

Name: Tapio
Age: 88
Family: Residents and staff of the service house.
Residence: Service house in Central Finland.
Technology use history: Watch TV with others in the common living room and take part in conversations. Tapio also likes to do crossword puzzles and listens to a lot of radio (music and YLE Speech) when he is alone. He also enjoys looking at old photographs.