Tampere University

IIKKA PIETILÄ

Studies of Digital Solutions Supporting Societal Participation of Youths

Tampere University Dissertations 716

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ACADEMIC DISSERTATION
To be presented, with the permission of
the Faculty of Information Technology and Communication Sciences
of Tampere University,
for public discussion in the Auditorium Pieni Sali 1
of the Festia building, Korkeakoulunkatu 8, Tampere,
on 9 December 2022, at 12 o'clock.

ACADEMIC DISSERTATION
Tampere University, Faculty of Information Technology and Communication Sciences
Finland

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The originality of this thesis has been checked using the Turnitin OriginalityCheck service.

Cover design: Roihu Inc.

ISBN 978-952-03-2680-7 (print)
ISBN 978-952-03-2681-4 (pdf)
ISSN 2489-9860 (print)
ISSN 2490-0028 (pdf)
http://urn.fi/URN:ISBN:978-952-03-2681-4

Carbon dioxide emissions from printing Tampere University dissertations have been compensated.

PunaMusta Oy – Yliopistopaino
Joensuu 2022

ABSTRACT

Democracy and societal participation are dynamic and transforming concepts and are affected by the ongoing technological transitions such as digitalization. Simultaneously, young people are required to operate in complex and rapidly changing environments and to navigate through realities that are distorted with misinformation and disinformation. One way to enhance societal participation for youths is to enable taking part in societal and democratic processes. This can be conducted through providing digital services that are safe, offer access to information, and by integration to governmental processes and recognition by the officials, enable having an actual effect on policies and decisions. Although various eParticipation services have been developed and studied, thorough investigations of young people's conceptualisations, and user needs and requirements for eParticipation are missing. Moreover, the specific mechanisms through which the successful eParticipation services support young people's societal participation are unexplored.

The main scientific fields that this thesis contributes are computer science and social science. More specifically, in computer science, this thesis links to the research tradition of human-technology interaction (HTI), and in social science to the research of societal participation. This thesis applies quantitative and qualitative research approaches HTI, psychometrics and applied psychology, and studies on political behaviour. The studies included in this thesis were conducted in ALL-YOUTH research project (2018-2023) funded by the Strategic Research Council of Finland. Furthermore, an eParticipation platform prototype entitled Virtual Council (Digiraati in Finnish) was simultaneously developed in the project and used as an object of the research.

This thesis is composed of five publications. Four publications are based on four separate empirical studies and one publication is theoretical. Altogether 467 young Finnish people participated in the studies that took place between 2018 and 2021. Surveys were conducted among 360 participants and 107 people took part in interviews. The first study aimed to provide an understanding of the young people's conceptions of digital participation and obstacles for participation. The second study explored the user needs of young people in regard to eParticipation. In the third

study, field tests of an eParticipation service prototype were conducted. Fourth study explores the significance of digital solutions in relation to societal participation during the COVID-19 pandemic.

This thesis provides theoretical and practical contributions through answering the research questions: 1. What are the youths' conceptions regarding digital societal participation? 2. What are youths' user needs regarding digital societal Participation? 3. How can digital solutions support societal participation of youths? In theoretical perspective, this thesis elaborates on the conceptualisation of digital and societal participation and proposes a novel model entitled Citizen-centric socio-cognitive model for participation. On a more practical level, this thesis provides a set of young people's user needs and requirements for eParticipation services: Safe discussion environments, interesting and relevant topics, enabling reciprocal interactions with officials, feedback loops, and high level of integration to governmental processes. Moreover, feature-level solutions such as easy-to-use search tools, customisable notifications and recommendations, informative dashboards and impact representations, and anonymity were considered as solutions that may enable responding to the user needs and requirements. Additionally, as a further practical contribution, this thesis presents the Virtual Council prototype. This thesis elaborates on how eParticipation services can enable and advance the societal participation of young people by lowering the threshold to participate through various activities, and by increasing the societal participation related self-efficacy of young people. Finally, this thesis explores how digitality has supported young people during COVID-19 related lockdowns by enabling working, studying, socialising, and societal participation, and how ICT skills have been a valuable factor in sustaining coping.

The results enable design and development of more inclusive and enticing eParticipation services that provide for the sustainable development of societies. The model can be utilised as a framework for research of (e)Participation and applied in public and third-sector activities planning and impact assessment. Moreover, the results further advance the theoretical and empirical research in HTI, especially in the contexts of societal participation.

PREFACE

It was during one of the introductory classes in my master's studies where I asked Tuomo Kujala for advice on what I should do if I would like to spend more time in academia than just until the end of my studies. What I did not know at that time was that two years later, I would be accepted to the Doctoral Programme of Computing and Electrical Engineering in Tampere University of Technology[1] and that my PhD would be enabled through employment in a project funded by the Strategic Research Council within the Academy of Finland. Without the experiences in JYU I most likely would have not had the courage to apply. Thus, I am thankful to Pertti Saariluoma, Tiina Parviainen, Rebekah Rousi, Paavo Nieminen, Toni Pitkänen, Saku Sourulahti, and Jenna Pesonen for the inspirational times in Jyväskylä. The conversations at the lab and afterwards at Teerenpeli with Erkka Heinilä provided me with memorable and priceless philosophical and mathematical insight on science and life for which I truly am grateful.

During the time working on my PhD, I was lucky to be a part of two intertwined working communities: The research group Human-Centered Technology (IHTE) and ALL-YOUTH project. The opportunity to work in IHTE and TUNI has provided me with a great possibility to develop as a HTI researcher and to learn as the group really is a unique composition of extraordinary researchers - current and former ones. Thank you for what I have learned and for your support, Aino Ahtinen, Elina Hildén, Aleksi Hiltunen, Kirsikka Kaipainen, Anu Lehtiö, Thomas Olsson, Aparajita Chowdhury, Salla Jarske, Maria Hartikainen, and Jouko Makkonen. I would like to express my gratitude separately to Jari Varsaluoma for acting as a spare big brother to me and setting an example on how to become a researcher. Thank you Jari for the collaboration and being there, and for being such a solid colleague; I could not have wished for a better example.

The ALL-YOUTH project formed another valuable working community for me. Without the multidisciplinary project I would have not learned as much on the

[1] Tampere University of Technology was merged with the University of Tampere and is now known as Tampere University or TUNI. Some students, including myself, were able to transfer from the Doctoral Programme of Computing and Electrical Engineering to a new doctoral program entitled Doctoral Programme of Humans and Technologies.

various scientific disciplines and traditions during my PhD. I thank the ALL-YOUTH work package PI's Reetta Mietola and her predecessor Reetta Toivanen, Päivi Honkatukia, Jukka Viljanen, and Irmeli Mustalahti. Your constructive input has indeed been valuable and advanced substantially forming the grounds for the studies that constitute this thesis. I am also grateful for the collaboration and support from all, former and current brilliant researchers in the ALL-YOUTH project. I would like to especially thank Susanna Ågren, Tiina Rättilä, Jenni Kallio, and Miia Lähde for cooperation on the co-authored publications.

This thesis would not have been possible without the support of an invested, encouraging, and understanding instructor. Although four years is a relatively short period of time, I am privileged to have been able to work under the supervision of Professor Kaisa Väänänen. Thank you Kaisa for believing in my potential and for giving me this opportunity, and for offering me guidance through my PhD. I admire your way of instructing your students but also your leadership, and how you have been able to build such a remarkable research group in IHTE. I have learned a lot from you.

Obviously, I want to thank my friends and family as they are what has provided the foundation and surroundings that enabled me to pursue PhD in the long run. Thank you Tatu, Eki, Teppo, Paavo, Mikko, Mika, Both Jeres, Tuomo, Pietari, and Jimi - former and current people in #PLK. Especially to Tuomo, I am thankful for the inspiring conversations throughout the years. Moreover, I am grateful for the forest excursions with Miikka, Matti, Jesse, Alex, Olli, and Joel for challenging me to explore performance limits. Thank you Riku, Jaakko, Tommi, and Tomi for being there. Thank you Oskari and Jemina - your beautiful family and determination inspire me. To Marko and Riikka I am grateful for the various summer adventures - Marko's expression for commitment: *"töppöset mustalle"* has motivated me greatly outside skateboarding as well.

I am grateful to all my families for the support and love. Thank you, Ikke-Eno and Anne, and Make-Eno and Annikki for your support. Thank you Hannu-isi, Jolly, Vicky and Tiara for the encouragement and being there. Vicky, your determination, and commitment are an inspiration. Tiara, your mind works in a remarkable way, and it is always a delight to play or do your homework with you. Jenni, Mika, and Tatu, it has been awesome to grow with you - I admire all of you. Thank you, Timo, for setting an example and for wisdom that cannot be learned from books or on a lecture. Heikki, I have always looked up to your integrity and honesty - you are very dear to me, and I am grateful for your, Hanna-Leena's, and Calla's support and encouragement.

Mimmi, I could not have a better mother. I do not think that anything in my life would have been possible without your unconditional love, support and understanding - thank you for everything you have done for me.

Thank you Niina, my significant otter, for having me in your life and for enduring the last few months while I've worked on finishing this thesis and some other projects. I respect you greatly as a scholar and have been privileged to collaborate with you. You, our adventures in nature and the home that we have are very dear and of the utmost importance to me and keep me sane and safe.

My apologies to all for being hard to reach for the last four years or so.

CONTENTS

List of figures and tables

LIST OF ABBREVIATIONS AND TERMS

ALL-YOUTH	A research project regarding societal participation of the Finnish youths. Funded by the Strategic Research Council of Finland. Active during 2018-2023.
ANOVA	Analysis of variances. A family of statistical methods. ANOVA can also refer to a specific method which can be applied to test differences in means of a continuous variable between three or more groups.
Bonferroni correction	A statistical method that can be applied to correct results of statistical testing to mitigate type II error possibility by dividing the selected alpha threshold of significance by the number of executed tests.
HCD	Human-centered design
HCI	Human-computer interaction
HTI	Human-technology interaction
IS	Information system
Kolmogorov-Smirnov test	A statistical test that can be applied to inspect the normality of a variable
Kruskal-Wallis test	A non-parametric equivalent of an analysis of variances. Can be applied to determine if there is a difference in a variable between two or more independent samples. Does not assume normal distribution.
Mann-Whitney U test	A non-parametric equivalent of a t-test. Can be used to determine if there is a difference in a variable between two independent samples. Does not assume normal distribution.
MANOVA	Multivariate analysis of variance. A statistical test that can be applied to determine if there are differences in multiple continuous variables over multiple categorical variables.

PCA	Principal component analysis. A statistical method that can be applied to reduce dimensions on a dataset and to explore possible latent constructs.
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis. A method to conduct systematic literature review as proposed by Moher et al. (2009).
Shapiro-Wilk test	A statistical test than can be applied to inspect the normality of a variable
UCD	User-centered design
UX	User experience. How a user experiences, perceives, and interacts with a system or a service.
Virtual Council	An eParticipation platform developed during the ALL-YOUTH project.
Related-samples Wilcoxon signed-rank test	A non-parametric equivalent of a paired samples t-test. Can be applied to determine if there is a difference in a variable between two different measurements in the same sample. Does not assume normal distribution.
QoE	Quality of Experience
QoS	Quality of Service
QQ-Plot	A scatter plot that can be used to inspect the normality of a variable graphically

LIST OF PUBLICATIONS

This thesis consists of five publications:

Publication I **Pietilä, I.,** Varsaluoma, J., & Väänänen, K. (2019). Understanding the Digital and Non-digital Participation by the Gaming Youth. *LNCS Volume 11747, 2019, p. 453-471. Presented at 2019 IFIP TC13 INTERACT 2019*.

Pietilä was in charge of the research planning and design, execution and analysis of the study. Pietilä was the main author.

Publication II **Pietilä, I.,** Meriläinen, N., Varsaluoma, J., & Väänänen, K. (2021). Understanding youths' needs for digital societal participation: towards an inclusive Virtual Council. *Behaviour & Information Technology*. Taylor and Francis.

Pietilä was in charge of the research planning and design, execution and analysis of the study. Pietilä was the main author.

Publication III **Pietilä, I.,** Lähde, M., Varsaluoma, J., & Väänänen, K. (2022). EParticipation for Supporting Societal Participation Self-efficacy and Lowering the Thresholds of Societal Participation: Case Virtual Council. *In CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI EA '22).* Association for Computing Machinery, New York, NY, USA, Article 31, 1–8.

Pietilä was in charge of the research planning and design, execution and analysis of the study. Pietilä was the main author.

Publication IV **Pietilä, I.,** Meriläinen, N., Varsaluoma, J., & Väänänen, K. (2021). Citizen-centric socio-cognitive model for societal participation. Short paper. *EGOV2021 – IFIP EGOV-CeDEM-EPART 2021 conference and in Proceedings of Ongoing Research, Practitioners, Posters, Workshops, and Projects at EGOV-CeDEM-ePart 2021 co-located with the IFIP WG 8.5 International Conference EGOV-CeDEM-ePart 2021*. CEUR Workshop Proceedings, CEUR-WS.org 2021.

Pietilä was in charge of the ideation and creation of the CCSCM. Pietilä was the main author.

Publication V **Pietilä, I.,** Kallio, J., Meriläinen, N., Varsaluoma, J., & Väänänen, K. (2022). Digital solutions supporting young people's societal participation during the early stage of COVID-19 lockdowns in Finland. *Under review in Government Information Quarterly*. Elsevier.

Pietilä was in charge of the research planning and design, execution and analysis of the study. Pietilä was the main author.

1 INTRODUCTION

This chapter provides elucidation of the premises and basis for the motivation behind this research. In this chapter, the backgrounds and motivations, research scope and questions, and the structure of the thesis are described. The project that has provided the context for the research underlying this thesis is introduced and the main contributions are summarised and contextualised.

1.1 Background and motivation

Democracy, societal participation, and civic engagement are dynamic and transforming concepts and are, like many other systems, affected by technological transitions such as digitalization in all its ubiquity and pervasiveness. Simultaneously, young people are required to operate in complex and rapidly changing environments and to navigate through realities that are distorted with misinformation, disinformation, and coloured with fears of conflicts, doxxing, and targeting. One way to enhance deliberative participation for youths is to enable taking part in societal and democratic processes through providing digital services that are safe, offer access to information, and by integration to governmental processes and recognition by the officials, enable having an actual effect on policies and decisions.

However, the digital services that have aimed to enable societal participation i.e., eParticipation services, have not all succeeded. Digital services, for instance websites and apps, may repeat similar problems regarding inequality as traditional ways of participation (Oser et al., 2013). Moreover, young people vary in their media literacy adaptedness and abilities to use digital tools (Meriläinen et al., 2018) as well as in their information retrieval skills (Maier-Rabler and Huber, 2010). Toots (2019) has asserted that eParticipation services create both possibilities and failures for societal participation, and further emphasises the existing eParticipation services complexity and inability to meet the various user groups expectations and goals in participation.

Especially the societal participation of young people has been increasingly under institutional and political concern as well as a target of interest for many scholars

(E.g., Watts & Flanagan, 2007; Amnå & Ekman, 2014). The societal participation of young people continues to change, which has been approached from various premises and through conflicting framings. From an institution-centric and conventional viewpoint, there has been a decline among young people in activities that are regarded as societal participation, such as voting, reading newspapers, having trust towards representative democracy, and taking part in political party activities (Galston, 2001; Patti et al., 2004; Amnå & Ekman, 2014; Dalton, 2015).

In addition to considering societal participation as an individual responsibility, the structural opportunities for societal participation are seen as equally or even exceedingly salient predictors for how involved the younger generations are in societal matters (Keeter, 2002; Watts, 2003). The interactional, conceptual, and procedural limitations in these structural opportunities are seen as constraints for governance to develop more collaborative in its nature (Newman et al., 2004).

From a more citizen-centric viewpoint, some scholars emphasise the various possible causes behind the decreased quantity of participation and increased dissatisfaction and alienation towards politicians, institutions and democracy itself. For instance, Theiss-Morse & Hibbing (2005) and Rosanvallon (2008) highlight distrust towards politicians as a key factor in societal disengagement and affiliate it with the threat of decreased legitimacy of societal decisions (See also Amnå & Ekman, 2014).

1.2 ALL-YOUTH project and Virtual Council

The studies that form this thesis were conducted as a part of a project entitled ALL-YOUTH. The ALL-YOUTH project aims to enable the participation of young people in society and to explore the possibilities and obstacles for their societal participation. Also, sustainable development, future and growth, digitality, and well-being are central aspects to the ALL-YOUTH project research. More specifically, ALL-YOUTH research targets the demographic segment of Finnish people aged between 16 and 25 years.

The ALL-YOUTH project is funded by the Strategic Research Council at the Academy of Finland, and it spans over the years 2018-2023. The ALL-YOUTH project is a multi-disciplinary research consortium consisting of partners from University of Helsinki, University of Eastern Finland, and University of Tampere, and altogether more than twenty researchers have collaborated under the project. The individual scholars that have worked in the project vary in their scientific

background; the project has employed researchers from different fields such as youth studies, legislation, anthropology, environmental science, human rights, political and social sciences, sociology, computer science, and information technology. The ALL-YOUTH project is organised into five different work packages: 1. Towards Youth Equality, 2. From Dreams to Reality, 3. Digital Solutions for Digital Generation, 4. Resolving Legal Obstacles, and 5. Creating Sustainable Well-Being. The research that comprises this thesis is mostly done from the perspective of work package 3. Digital Solutions for Digital Generation, however, 4 / 5 of the underlying publications were written in collaboration with scholars from other work packages.

The concept of user experience (UX) provides grounds for various approaches to studying and analysing interactions with digital services and information systems. User needs, user research, and human-centered design methods may be considered as concepts that UX provides for. One of the goals in the ALL-YOUTH project was to create a prototype of an eParticipation service in which the user needs of young people are broadly considered. Based on large-scale human-centered design methods application, conceptualisations, user research, and user needs proposed in publications PI and PII an eParticipation service prototype entitled Virtual Council (Digiraati in Finnish) was released. In the perspective of the publications that establish this thesis, Virtual Council can be considered as both a research outcome (PI and PII) and as an object of research (PIII). The ownership of Virtual Council has since been transferred to the Ministry of Justice and will officially be implemented as a part of public Finnish digital democracy services. Virtual Council is described in more detail in publications PII and PIII, and at the time of writing this section, found online in: https://digiraati.fi/.

1.3 Research scope and questions

This thesis comprises five articles that were based on separate studies. The research is divided into three distinct components, which as a whole provide views and interpretations regarding the many forms of digital participation of youths. The first component, which draws from empirical and theoretical research, aims to broaden and elaborate on the understanding of the ideas, conceptions, and obstacles for digital and non-digital societal participation that youths have, to conceptualise participation as a democratic, systemic, and subjective process. The second component includes the practical contribution of this research and seeks to disclose the user needs and requirements that youths have in regard to eParticipation and the

corollary design implications. The third component pursues to describe the mechanics through which eParticipation and other digital services support and enhance youth's societal participation.

To satisfy the goals inferred from the components described above, this thesis aims to answer the following research questions (RQ's):

Research question 1:	What are the youths' conceptions regarding digital societal participation?
Research question 2:	What are youths' user needs regarding digital societal Participation?
Research question 3:	How can digital solutions support societal participation of youths?

For disambiguation and to avoid confusion with the single study-level research questions, these three research questions are referred to as thesis-level research questions. The first research question (RQ1) seeks to produce understanding of the conceptions and ideas that the youths have on digital societal participation. The first study (S1) and the corollary publication numbered one (Publication I) address this by conceptualising participation and its obstacles based on data acquired through interviews and a survey. The second research question (RQ2) aims to provide a broad understanding of the user needs and requirements that youths have for digital solutions that aim to enable societal participation. The second research question is extensively addressed in the second study (S2) and corollary publication PII. However, the user needs are also touched upon in the third study (S3) and publications PIII and PV, though not thoroughly discussed. The third research question (RQ3) explores the mechanisms through which eParticipation services and other digital solutions may support youths' societal participation and is addressed in the third (S3) and fourth (S4) studies and in publications PII, PIII and PV.

1.4 Contributions

The research that this thesis is based on, contributes mainly to the field of human-technology interaction (HTI), and more specifically to Human-Centered Design (HCD). Furthermore, the implications presented in the studies contribute to the design of digital services and platforms that aim to enable societal and political participation especially for youths, through comprehensive elucidation of the various

ways in which digitality is connected to the possibilities, intentions, motivations, and obstacles for participation. Therefore, the research also contributes to the fields of eParticipation, eDemocracy, and eGovernance. These areas and activities may be thought to enable actuation of citizenship in a democratic society. Moreover, these fields can be seen to be highly affiliated with governing. Therefore, the research underlying this thesis also contributes to the broader field of social sciences.

The five separate publications that constitute this thesis together elucidate the various aspects that are affiliated with the young people's digital participation. The first publication was aimed to provide understanding regarding the conceptions and ideas that youths have in relation to digital participation and to explicate the experienced obstacles youths have for societal participation The surveys and interviews were conducted among the participants at the Assembly 2018 demoscene and gaming event. The second publication focused on gaining insight on the user needs of youths in regard to digital participation and eParticipation services. The empirical data for the second study was acquired during workshops conducted in six different settings. The third publication draws from a study that contained week-long field tests of an eParticipation service prototype, Virtual Council. Empirical data used in the third publication was acquired through surveys and interviews. Fourth publication is a theoretical short paper that proposes a model that enables operating on societal participation and eParticipation in a citizen-centered way on internal, activity, and external layers. The fifth publication is based on a study that was executed as a survey to elucidate the significance of various digital solutions in relation to youths' participation during the early phases of COVID-19. In Table 1 and Figure 1, the publications and their key contributions are summarised, and further details are presented.

#	Publication title	Contributions	Methods	Sample size	RQ	Study
I	Understanding the Digital and Non-digital Participation by the Gaming Youth	Understanding of the youths' conceptions of digital participation and obstacles for participation.	Survey* Interview**	*277 **25	RQ1 RQ3	S1
II	Understanding Youth's Needs for Digital Societal Participation: Towards an Inclusive Virtual Council	Understanding of the youth's user needs for digital participation, design implications, Virtual Council prototype.	Workshops, small-group interviews & surveys	74	RQ2 RQ3	S2
III	eParticipation Platforms for Supporting the Self-efficacy of Diverse Youth: Case Virtual Council	Understanding of the significance of digital solutions in regard to societal participation self-efficacy and thresholds to participate.	Field tests, interview*, surveys**	*8 **34	RQ3 RQ2	S3
IV	Citizen-centric Socio-cognitive Model for Societal Participation	Theoretical contribution. Can be used as a theoretical framework in future studies or as a model for planning and evaluating activities.			RQ3 RQ1 RQ2	
V	Youths' Digital Participation in the Early Phases of COVID-19 Lockdown	Understanding the significance of digital solutions in regard to societal participation during COVID-19	Survey	49	RQ3 RQ1	S4

Table 1. Original publications, their central contributions, applied methods, sample sizes, and research questions that they relate to

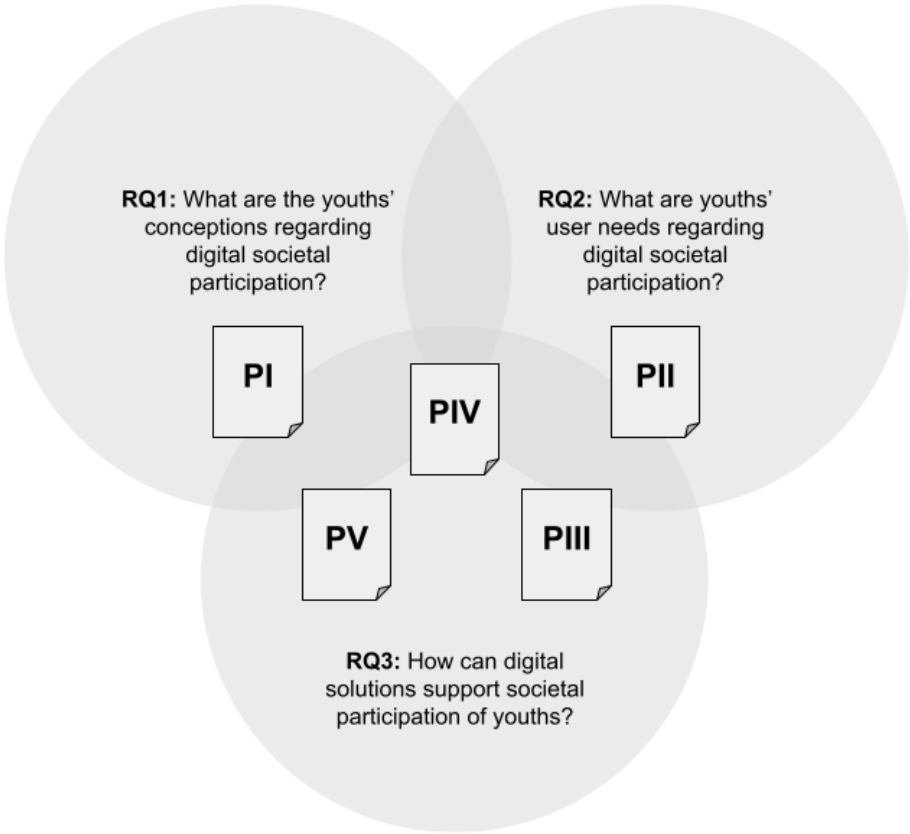

Figure 1. Summary of each publication's relationship to the thesis-level research questions

The contributions of this thesis can be categorised into theoretical, methodological, and practical contributions. The theoretical contribution of this thesis consists of two domains. In Publication I, an understanding of how young people conceptualise digital participation is constructed. Additionally, to the theoretical continuum, this thesis contributes by proposing a citizen-centric socio-cognitive model for participation (CCSCM), which is a multidisciplinary theoretical framework that enables approaching participation through external, activity, and internal layers. In addition to academic research, CCSCM may be applied for instance in public and third sector activities for planning and evaluation. However, CCSCM is at its initial stage and has not yet been validated. CCSCM is published in Publication IV.

Methodologically, the contribution of this study is two-fold. This thesis can be seen to contribute to the methodological tradition through mixed-method and interdisciplinary study approaches. In the studies constituting this thesis, qualitative

and quantitative methods are applied for enhanced reliability in novel ways. For instance, in Publication III (eParticipation platforms for supporting the self-efficacy of diverse youth: Case Virtual Council), the effects of eParticipation service use on an individual's societal participation self-efficacy is studied through a before and after measurements setting. This seems to have been unexplored before as a method in this context. Moreover, the way of applying inferential statistical methods may be seen as contributing to the methodological continuum. For instance, in Publication V, instead of interpreting the probability (p) values of statistical test results through strict categorisation and alpha cutoff points, the test result appraisal considers the context and ethical dimensions broadly and elaborates on the implications of type I and II errors. The results are interpreted and discussed rather on a gradient continuum than in a binary categorisation of statistically significant or non-significant.

Finally, as the practical contribution of this thesis, an eParticipation platform prototype entitled Virtual Council (Digiraati in Finnish) is introduced and the user needs of young people for eParticipation services are elucidated (Publication II).

1.5 Structure of the thesis

This thesis is structured in the following manner: In the second chapter, the related work and key concepts are presented: Human-centered design (HCD), user experience (UX), young people's societal participation, digital participation, eParticipation, and societal participation self-efficacy are elaborated. Additionally, various previous models and frameworks for eParticipation are discussed and specific studies that incorporate HCD or UX approaches in eParticipation research are presented. Finally, in the second chapter, the research gap is explained to further justify the research constituting this thesis. Chapter 3 consists of epistemological and methodological dispositions of this thesis and provides research tradition related contextualisation. Additionally, with the description of overall research approaches, in chapter 3, the research processes and the used research methods are described in regard to each study. After this, in chapter 4, the results are presented first study-wise and afterwards per each thesis-level research question. In chapter 5, Discussion, the results are set in a dialogue with the previous works juxtaposed with the relevant theory, and the preliminary version of the citizen-centric socio-cognitive model for societal participation (CCSCM) is discussed. Also, in chapter 5, the research limitations are elaborated. Furthermore, in chapter 5, possibilities for future studies are considered. Finally, in chapter 6, conclusive remarks are provided.

2 RELATED WORK

In this section, the literature review process is described, and an overview of the related studies and underlying theories are presented. After the literature review process and overview, the key concepts of human-centered design (HCD) approach are described, after which user experience, youth participation, digital participation, and eParticipation are elaborated as well as previous models and frameworks for eParticipation. Additionally, the research gap is summarised at the end of this section. This section aims to provide elaboration and conceptualisation of the key research areas on which this thesis is established.

2.1 Literature review process

The aim for the individual literature reviews is to provide information for conceptualisation of the key research and theoretical domains for this thesis. For each of the subsections a semi-systematic literature review was conducted. Literature review process followed the flow of Preferred Reporting Items for Systematic Reviews and Meta-Analysis, PRISMA as proposed by Moher et al. (2009). PRISMA consists of six stages and begins with identification, which refers to identifying records through database searches. PRISMA continues with screening, during which the duplicates are removed, and records are further screened at title level. After this, the full-text articles are appraised and non-compatible ones are excluded, and the reason for exclusion is elaborated. Finally, in PRISMA literature review, the process continues to include the articles in a qualitative synthesis and lastly for quantitative synthesis and meta-analysis. The applied adapted PRISMA process is described in Figure 3. Additionally, Appendix 1 can be referred to for specific search strings and other details.

In this thesis, the PRISMA literature review method is adapted. Database search and items screening was based on the item titles. After the title level screening, the items were skimmed through, and their abstracts were read. After this, the item relevance was appraised, and eligibility determined. Moreover, a quantitative synthesis and profound systematic meta-analysis are omitted as they are outside of

the scope of this thesis. In Figure 2 the appraisal at title and abstract levels, and process of inclusion and exclusion criterion applications is described in more detail.

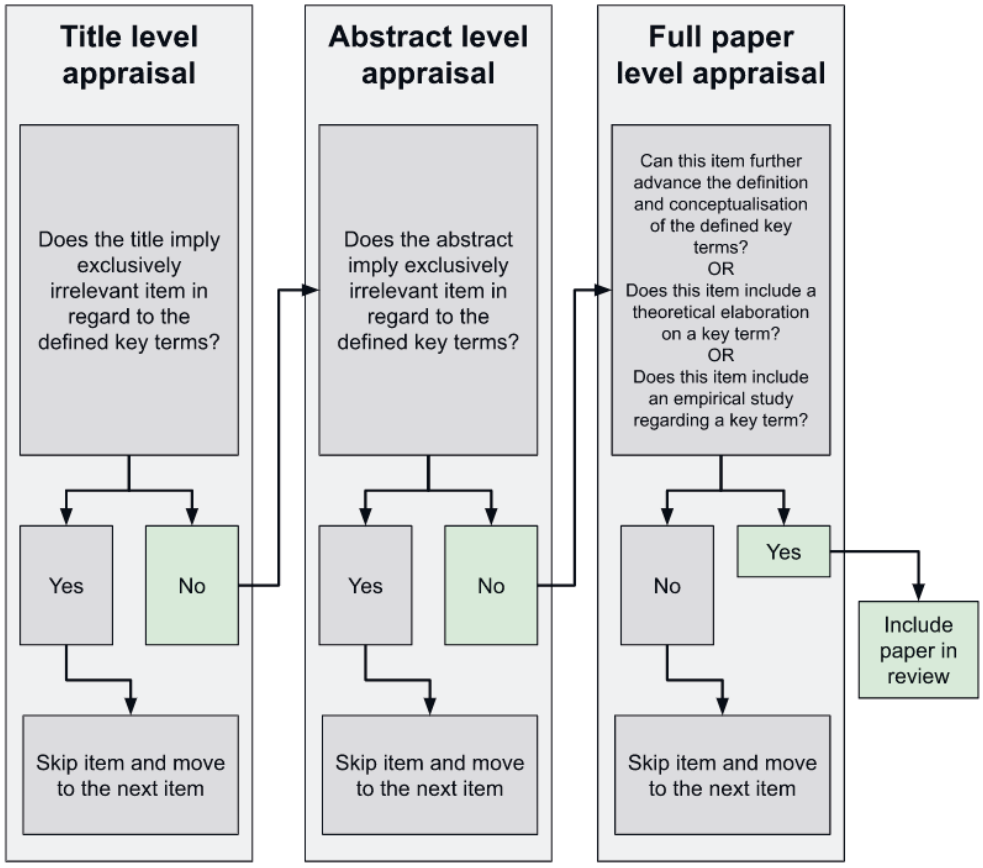

Figure 2. Selection of literature items for review

Scopus database and Google Scholar search engine were primarily used for the literature acquisition. Secondarily, literature review items were included through previous acquaintance and snowballing, i.e., by identifying relevant literature items referred in publications found through the initial search in Scopus or Google Scholar. These are denoted in the flowchart (Figure 2) as other sources. Subject area and publication year were used for filtering items in Scopus. In Scopus the results were sorted by the number of citations. First 1000 items of the results in Scopus were included in the initial screening. In Google Scholar, 5 pages (= 50 items as there are 10 items per page) of the results were included in the initial screening. In Google Scholar, the results were sorted by relevance, and time range was not limited.

Additionally, to include the most recent developments in the relevant concepts of each of the subsections, a complementary search was conducted. In this complementary search, the time range for the publications was limited to five years, between 2017-2021. Again, results were sorted by the number of citations. The first 100 items of the results in Scopus were included in the initial screening.

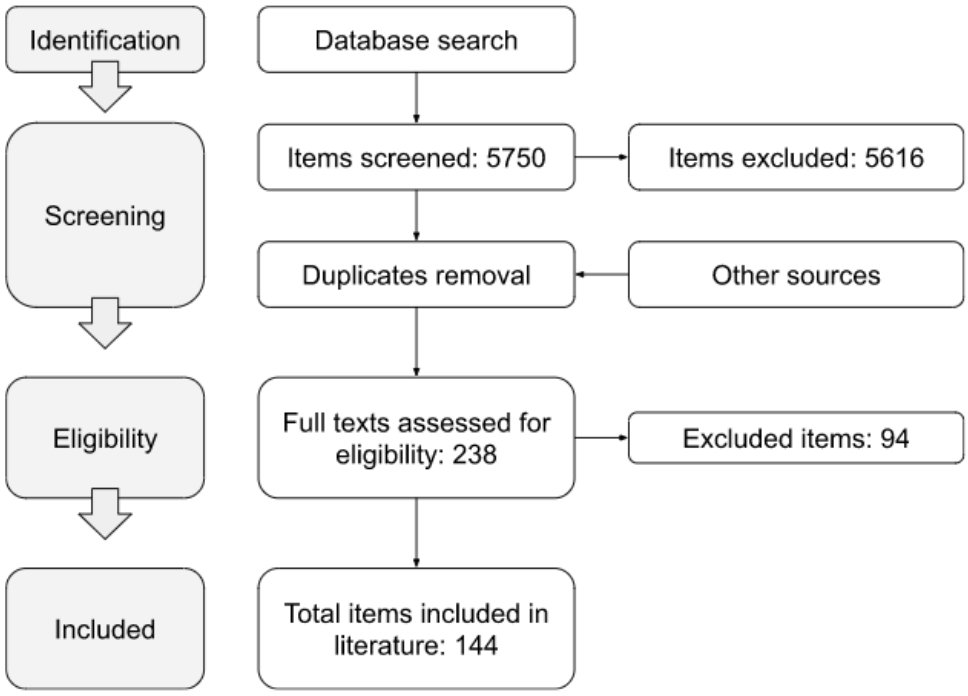

Figure 3. PRISMA flow chart, adapted from model proposed by Moher et al. (2009)

2.2 Theoretical framework and related work overview

Figure 4 portrays the key fields that form the foundation for this thesis: Human-technology interaction (HTI), digital participation, and societal participation. Human-centered design functions as the key approach in HTI for the studies that constitute this thesis. Applied / User psychology is contextualised as a subdomain in HTI for this overview, as the construct of domain-specific self-efficacy, which is often positioned under the field of psychology, is used in the studies. Digital participation sphere touches the concepts of acceptance, eParticipation, eDemocracy, and eGovernance. Especially acceptance is seen to be related with HTI

through the theories of technology acceptance and eParticipation acceptance. eParticipation is furthermore connected to the construct of societal participation self-efficacy. Societal participation is elaborated through previously identified obstacles and barriers for participation, latent and non-recognised forms for participation, and distinct activities that are attributed as societal participation. The concept of societal participation is connected with societal participation self-efficacy in various ways and their relationship is elaborated in Publication III. User research conducted in Study 1 and discussed in Publication I further elucidates the obstacles and barriers for societal participation.

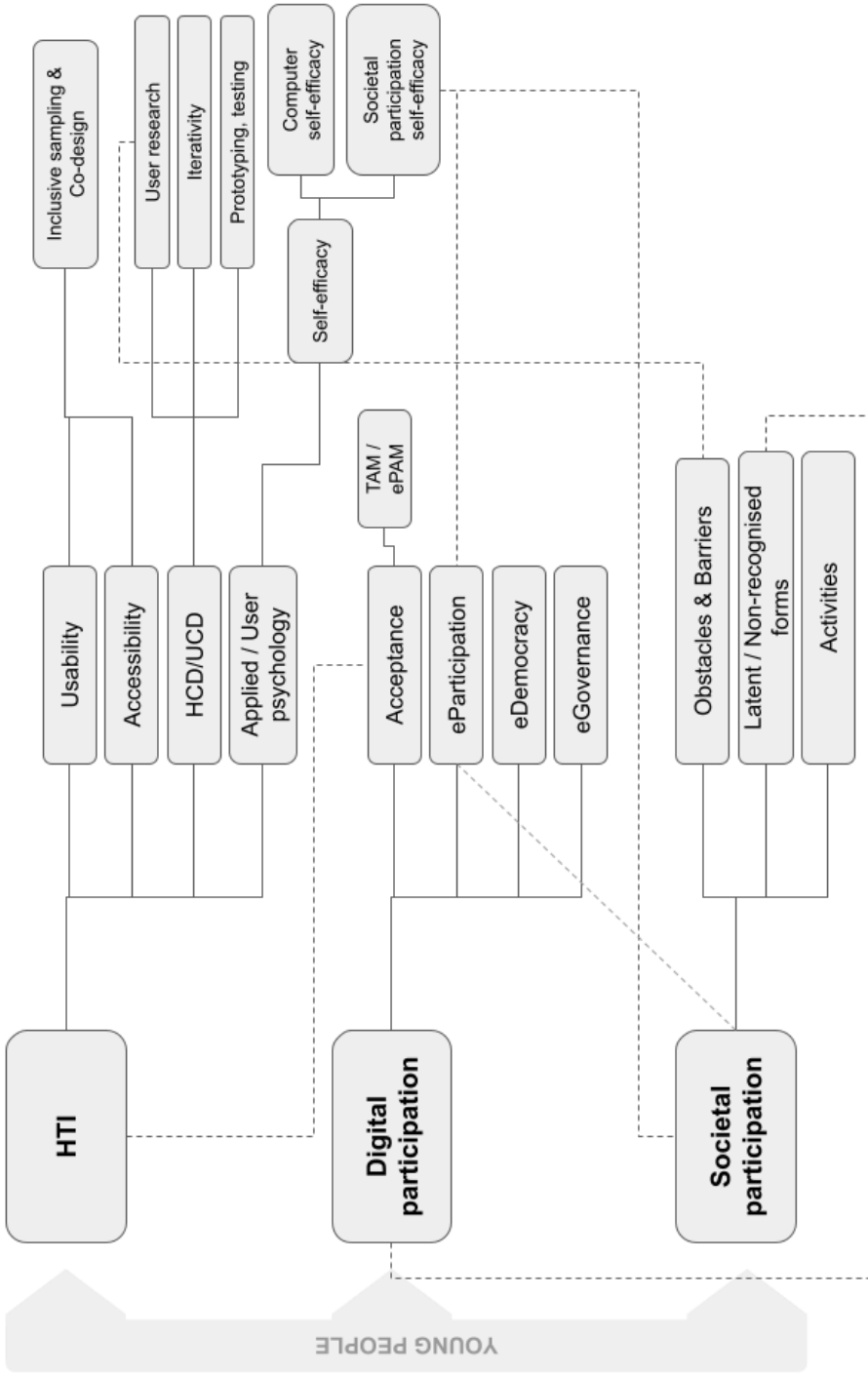

Figure 4. An overview of the theoretical framework and related works, and their relationships in the context of this thesis

2.3 Human-Centered design and User experience

In this section, the concepts of human-centered design, participatory design, and user experience are discussed. This section provides a conceptualisation of the key theoretical terms and describes the relevant scientific and epistemic approaches. Additionally, the related and similar theoretical and methodological fields are covered, and their differences and similarities are elaborated. The approaches and concepts presented in this section are set in a dialogue with the results proposed in this thesis in section 5. Discussion.

2.3.1 Human-centered and participatory design

Human-centered design (HCD) can be seen as an approach to designing and developing information systems. HCD emphasises effectiveness, efficiency, user satisfaction, well-being, and accessibility through prioritising users, user needs, requirements, tasks, and contextuality in designing information systems and their lifecycles (Ardito et al., 2013; ISO, 2019). Moreover, Maguier (2001) outlines that to reach the technical and functional requirements for software it is mandatory to address user requirements and continues to highlight that HCD enables including the users in development processes and thus provides for more usable systems.

The concept of inclusive design is also affiliated with HCD (Wilkinson & Angeli, 2014) and can be regarded as an approach within HCD which incorporates goals such as accessibility and universality for products and services (Keates & Clarkson, 2003). Moreover, Wilkinson & Angeli (2014) highlight that inclusive design approach enables considering the needs and requirements of the *less able* users in more depth. A general level description of a HCD process is described in Figure 5.

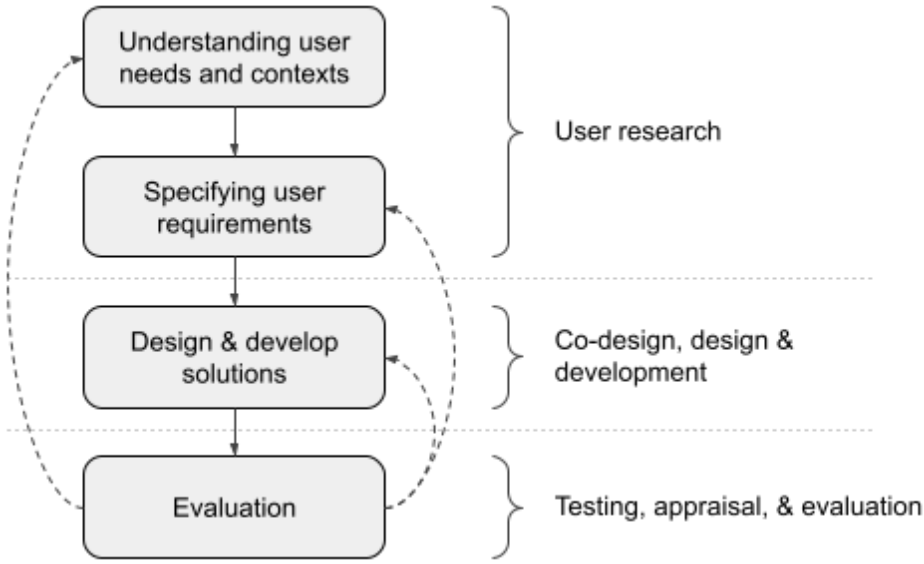

Figure 5. A general level description of a HCD process (Adapted from Harte et al., 2017).

More practically, one way to conduct HCD is through participatory design. Muller & Kuhn (1993, p. 26) asked, regarding participatory design, if we must *"always analyse the impact of technology on people, or is there just as strong an impact of people on technology?"* Spinuzzi (2005) argues that participatory design can be seen rather as a methodology than a research orientation. Vines et al. (2013) go even more into detail and assert that in human-technology interaction research contexts, the concept of participatory design refers to the act of including people in design and development processes of services and refers to various empirical studies incorporating participatory design methods. In similar lines, Kensing & Blomberg (1998) affiliate participatory design with including users in design and implementation of computer-based systems, but also mention the exploratory nature of participatory design. Vines et al. (2013) continue to elaborate that participatory design as an approach includes the assumption that enabling the end users as active participants in the design process increases their control over the technologies they use. Björgvinsson et al. (2010) affiliate participatory design with user driven design and elaborate that as technologies have developed more pervasive, also participatory design needs to develop and address research traditions and disciplines more broadly than before.

The concept of user centered design (UCD) may be seen as contiguous or partly overlapping with HCD. Gulliksen et al. (2003) outline user centered design as a process that focuses especially on usability, expands temporally over the

development process and system life, and follows principles such as focusing on user, involving users in development, iterativity, prototyping, and contextual evaluations. Gulliksen et al. (2003) have included holisticity in the principles of UCD, however they use it to refer to contextuality rather than holistic conception of a human.

For instance, Vines et al. (2013) and Redström (2006) recognise and discuss the problems of emphasising the concept of user over human in design processes. In the context of this thesis, HCD is recognised as an approach, where humans are seen holistically as cognitive, physical, and social beings. This thesis operates within HCD rather than UCD as HCD provides the possibility for broader conceptualisation of people and citizens than approaching them through reductive contextualisation as merely users of services or products.

Norman & Ortony (2003; see also Norman, 2004) propose an approach to emotion and design through dichotomy of designers and users, where the user's emotional responses may be divided into reactive, behavioural and reflective dimensions. Reactive is also referred to as visceral. Björgvinsson et al. (2010) highlight that (design) researchers have a special responsibility in including a heterogeneous sample of participants when applying participatory design as a research method especially in the contexts of potentially transformative services, such as eParticipation services. Including users as active participants in the design processes of services, the question of representation needs to be addressed, i.e., who is included in the sample and whose participation is enabled in the participatory design process? (Luck, 2003). In this thesis, the question of representation in sampling is related to issues discussed in sections 3.1. Epistemological disposition and methodology, and in 3.2. Research process, studies, and methods. Sample demographics of the research underlying this thesis is elaborated in section 3.3. Sample demographics summarised.

2.3.2 User experience

The concept of user experience (UX) provides grounds for various approaches to studying and analysing interactions with digital services and information systems. In the contexts of digital services and HTI research, by users we commonly denote the human beings (Or animals, plants or even other machines in some cases) that apply or consume a particular artefact i.e., service, product, application, or digital tool. While the concept of user is rather self-explanatory and obvious, the concept of

experience is often thought to be much less so. To understand the complex idea of user experience, the essence of experience must first be addressed in more detail. Buchenau & Suri (2000) describe the nature of experience to be something temporally dynamic, complex and highly related to the various sensory sensations and contexts. Furthermore, they conceptualise experience with high regard to subjectivity as experience itself can be significantly affected by previous experiences and the prevailing internal conditions.

International standardisation organisation, ISO (2010), defines the concept of user experience as *"Person's perceptions and responses resulting from the use and/or anticipated use of a product, system or a service."* Within similar lines, Pucillo & Cascini (2014) draws user experience to be a corollary result in an individual that is due to the characteristics and features of the used system in a combined effect with the user's premises. More specifically, these characteristics and features can be for instance presentation, performance, functionalities, and interaction mechanics of the system and they can manifest in both software and hardware layers (Ibid.).

Quiñones & Rusu (2018) summarise their conceptualisation of user experience based on the ISO (2010) definition to include i.a. the user's emotions, beliefs, and behaviour. They continue to emphasise user experience to extend temporally to phases before, during and after using a system. In parallel, Borsci et al. (2015) assert that the concept of user experience is heavily affected by temporal factors. They further elaborate that the amount of overall experiences a user has with the particular system or service is particularly significant in regard to the quality of the user experience.

In parallel to this, McNamara & Kirakowski (2006) characterise user experience as an approach to operating on the relationship between humans and technologies, and connect it to constructs such as engagement, pleasure, presence, and fun. Furthermore, they assert that HTI had previously been approached mostly through constructs such as usability, satisfaction, effectivity, and usefulness. They continue to conceptualise that user experience enables explorations to users' individual subjective experience while using a product. In a slightly broader sense, Reinecke & Bernstein (2011) assert that user experience is highly dependent on cultural contexts and advocate that cultural factors should be addressed when designing information systems.

According to Hassenzahl (2001) another way to approach information systems and digital services is through dividing their qualities into perceived domains of ergonomic quality (EQ), hedonic quality (HQ), and appeal. These domains are further elaborated by e.g., Laugwitz et al (2008). They assert that EQ covers

attributes that are goal and task oriented and affiliate EQ with efficiency and effectiveness. HQ, in turn, they link with non-task related constructs such as design's originality and how beautiful the artefact is (See also Hassenzahl et al., 2001). Hassenzahl et al. (2001) elaborate that these hedonic, non-task related qualities can be further divided into factors that are directed inwards and factors that are directed outwards in regard to the user. The inward directed factor Hassenzahl et al. (2001) affiliate with constructs such as personal development, growth, and status, which are further connected to user's preferences and likelihood for using a service.

User experience is also seen to be essentially affiliated with different aspects of motivation (E.g., Bevan et al., 2015). Motivation in regard to user experience may denote the willingness of a user to use the system in question. However, motivation can also be approached from the point of view, where the aim is to influence the user's behaviour. For instance, Tromp et al. (2011) propose a framework that consists of coercive, persuasive, seductive and decisive influencing mechanics that are further set on continuums of salience and forcefulness. They continue to elaborate that for instance if coercive mechanics in design is applied, it is strong and salient in its nature. Seductive, in turn, may be something more covert and implicit.

2.3.2.1 Studying and operationalising user experience

The manifold concept of user experience can be studied in multiple ways, and various approaches and methodologies have indeed been applied (Saariluoma & Jokinen, 2014). It has been recognised that the complexity of user experience forms a challenge as each individual study often is required to operate with simplifications and relatively narrow frames in addition to high contextuality (E.g., Law & Sun, 2012). Moreover, McNamara & Kirakowski (2006) argue that evaluation is one of the key activities in HTI and dissect technology use to different areas for investigation: Functionality, usability, and experience. They also emphasise that the relationship between people and technology is rapidly changing and that broad understanding of the constructs under measurement is paramount for successful evaluation.

As HTI is an interdisciplinary field of research, it is not uncommon that theories and approaches that originate from outside of traditional information systems or usability research provide foundations for a study. Theories that have been used as basis for UX studies include for instance Personal construct theory (Psychology) (Hassenzahl, 2001) and Activity theory (Social sciences / Psychology) (E.g., Law & Sun, 2012).

One way to approach studying user experience is through prototyping, which can be defined as activities, in which different levels of representations of designs, tasks and interaction mechanisms can be applied (Buchenau & Suri, 2000; Lazar et al., 2009). An example of how to quantitatively approach measuring user experience is proposed by Hassenzahl et al. (2001). It includes a seven-point semantic differential consisting of opposing adjective pairs that reflect different hedonic qualities of the service or tool under investigation. In another example, Laugwitz et al. (2008, p. 4) draw an assumption from previously mentioned Hassenzahls (2001) domains of EQ, HQ, and appeal: If a questionnaire is used to study user experience, it should cover both, *perceived attractiveness,* and *quality of the product on the* [task-] *relevant aspects*. In their study, Laugwitz et al (2008) continue to propose a questionnaire that consists of 26 individual semantic differential items that explore perspicuity, efficiency, dependability, stimulation, and novelty. These can thus be thought of as constructs that reflect different areas of user experience.

In addition to surveys that incorporate semantic differentials or sets of Likert scale assertions, data acquired through usage-based metrics and system logs may also be used as a basis to develop information systems and digital services to provide for enhanced user experience. This can denote e.g., in web contexts explicit descriptions of how users navigate in the site hierarchy, and how long it takes to execute certain tasks (Lazar e al., 2009). For instance, Harrati et al. (2016) argue that System Usability Scale does not adequately enable measuring acceptance and satisfaction of e-learning systems. Thus, they propose applying analysis of usage metrics as complementary methods for more thorough evaluation. More specifically in regard to usage metrics, they operate with parameters such as cursor distances, task completion rates and durations, and mouse clicks.

As alternative (I.e., other than desktops) ways of interacting with information systems become more prevalent and computing transforms more ubiquitous (Weiser, 1991; Satyanarayanan, 2001), also the constructs through which UX is operated and studied need to be revisited. These alternative methods for interactions may include voice activation, gaze control, or haptic interfaces. This is connected to the argumentation of Olsson et al. (2013), where it is asserted that especially in regard to technologies that do not exist yet, the theoretical understanding of the relationship of expectations and user experience is of utmost importance as limited understanding may lead to poor designs and unsuccessful investments. Thus, they conducted a qualitative explorative study on expectations and user experience for mobile augmented reality services applying contextual interviews, and concluded that expectations such as captivation, collectivity, connectedness, and surprise exist.

Perhaps the manifold characteristics of the expectations would have not been revealed if a less exploratory and open approach would have been applied.

Benford et al. (2009) propose a framework for operating on UX through trajectories. They define trajectories as tools that enable describing complex user experiences through facets, such as hybrid structures, transitions, managing, and interleaving. In regard to trajectories, hybrid structures mean e.g., virtual and physical spaces, time structures, and user roles. Transitions denote crucial moments in time which can concern passing over the borders of the aforementioned hybrid structures. Transitions can mean more specifically beginnings or endings, role and interface transitions, or temporally stretching events, such as disengaging and re-engaging. Similarly, e.g., Hassenzahl & Tractinsky (2006) emphasise that user experience is essentially affiliated with contextuality and temporality and that the varying contexts and situations are interrelated.

Also, the social and communicative aspects of information systems are developing even further and persuasive design philosophies such as gamification are becoming more often applied. These developments establish requirements for more comprehensive and holistic UX models and measures for evaluation. Law & Sun (2012) propose applying activity theory (AT) for UX evaluation in gamified educational contexts. They apply AT as a theoretical framework, which enables considering entities and phenomena in a system. These entities and phenomena may be subjects, objects, tools, division of labour, community, rules, and outcomes that function in reciprocal manner and are temporally dynamic. Law & Sun (2012) argue that applying AT may enable modelling complex interaction between subjects and communities, such as how the users were able to recover from confusing situations.

2.3.2.2 Affine and overlapping concepts

Ardito et al. (2013) compare user experience with usability and argue that UX is a broader conceptualisation and that it addresses subjective aspects such as aesthetics, emotions and sociality. Analogously, Tuch et al. (2012) elaborate that understanding of the relationship of aesthetics and usability is essential for designing for a good user experience. Usability, in turn, is limited in comparison to UX as it mainly covers attributes such as how easy a system is to use (Ibid.). McNamara & Kirakowski (2006) assert in similar lines, that usability is equivalent to the nature of user and product interaction and reflects whether the product does what the user wants it to do. Moreover, Hedegaard & Simonsen (2013) connect usability to measuring how well a service or a product helps users to execute the intended task. Hedegaard &

Simonsen summarised in 2013 that HTI lacks a consensus on what is the relationship of UX, and usability and it was not agreed if usability is a sub field in UX.

Usability, however, has been criticised. For instance, Hassenzahl et al. (2001) discuss usability as a reductionist approach where a specific limitation lies in inability to explore the difference between a user just getting a task executed and actually enjoying executing it. It is common in modern definitions that usability is seen as a hyponymous concept in relation to user experience, i.e., usability can in a way be defined as a sub area in UX. The opposite of a usable system is an unusable system. Unusability can manifest through poor designs which in turn cause the users to experience the system as complex, hard to operate, and have a steep learning curve (Maguire, 2001). Maguire (2001) summarises that a high level of usability in a system is beneficial as it may increase productivity, reduce error rates, enhance acceptance, and provide for higher learnability. This thesis operates with UX rather than usability as the goal is to understand users and their needs at a more holistic level, although the concept of usability is an important factor in HTI.

User experience is every so often used alongside or even interchangeably with concepts of quality of service (QoS) and quality of experience (QoE) (E.g., Shin et al., 2017). However, in comparison to user experience, QoS can be criticised as it fails to address the end user's perspectives (Shin et al., 2017), and can be predominantly applied to evaluate the performance of a system from a rather technical angle regarding the non-functional attributes, such as availability, payment, security, trust, and ownership (O'Sullivan, et al. 2002). However, O'Sullivan et al., (2002, p. 125) also include the concept of service quality in these non-functional attributes, and describe it to denote *"The difference between expected and actual service provision."*, which is highly connected to the users expectations, which again is implicitly present in the definitions regarding user experience (E.g., ISO, 2010; Quiñones & Rusu, 2018; Borsci et al., 2015). O'Sullivan et al. (2002) continue to recognise the complex and domain-specific nature of the service quality. Furthermore, O'Sullivan et al. (2002) discuss a study by Parasuraman et al. (1988) and summarise service quality to further comprise of constructs such as reliability, responsiveness, and empathy. Especially the last item in this list, empathy, can be seen to be related to the modern conceptualisation of user experience, as O'Sullivan et al. (2002) associate it with caring and personalised attention as a part of the service and its development.

Technology acceptance is a concept that originally operates with the constructs of perceived usefulness and the perceived ease of use of a system and enables to predict, explain, and analyse use of systems (Davis, 1986; Davis 1989). Perceived

usefulness refers to how a potential user believes that a system or service may make their life better or help reach their goals. Perceived ease of use denotes the expectations the potential users have in regard to the efforts that the use of a system or service requires, i.e., how easy it is to use the system (Ibid.). Davis (1993) argues that the constructs of perceived usefulness and ease of use indirectly affect the attitudes towards using a system and therefore the actual use of a system. Nowadays various context and task specific technology acceptance models exist. Venkatesh et al., (2003) outline the general thought behind different user acceptance models as a feedback loop, where individual reactions to information technology affect the intentions to use a technology which in turn is a determinant in whether or not a technology is used. In their review and meta-analysis Venkatesh et al. (2003) propose that constructs such as performance expectancy, effort expectancy, and social influence determine the behavioural intention to use a system, whereas facilitating conditions have direct effect on the use behaviours. They continue to elaborate that these constructs are interrelated with factors such as gender, age, contextual and task-specific experience, and voluntariness of use.

Although the notion of user experience is widely used in multiple fields of research and industries, there are conflicting definitions - even within the HTI research community. For instance, Battarbee & Koskinen (2010) summarise three competing approaches to user experience in design contexts that originate from different disciplines: Measuring approach, empathic approach, and pragmatist approach.

Measuring approach, as the label implies, is commonly applied in settings where understanding of user experience is formed through measuring parameters of the user or usage. These measurements can include external and internal physiological attributes such as facial expressions, heart rates, EEG, or electrodermal activities. In addition to physiological attributes, the measurements may also aim to explain user experience through subjective reporting. Empathic approach connects broad understanding of the user's emotions, desires and expectations to the design process, and often operates through highly qualitative methods, for instance textual and visual data types. (Battarbee & Koskinen, 2010).

However, Battarbee & Koskinen (2010) set pragmatist approach as a broader conceptualisation in comparison to the previously described measuring and empathic approaches. Furthermore, they advance to assert that measuring and empathic approaches can be seen as special cases of pragmatist approach. Additionally, the authors criticise all of these three approaches for their individualistic nature and lack of consideration of social factors and argue that the

various understandings of user experience are limited if social aspects of experience such as co-experience are not addressed (Ibid).

In similar lines, McCarthy & Wright (2008) emphasise that the pragmatist approach is open in regard to its methodology and continue to describe it as holistic and relational in its nature referring to their previous studies (Wright & McCarthy, 2003; McCarthy & Wright, 2004). They (McCarthy & Wright, 2008) additionally argue that in pragmatist approach the understanding is drawn from knowledge of the user's lives, feelings, situations, and subjective perspectives and especially emphasise empathy as a factor.

2.4 Societal participation

The manifold conceptualisation of societal participation is provided in this chapter. First, the recent developments in the research of participation of young people is discussed. After this the terms digital participation and eParticipation are elaborated. The third section describes previous models and frameworks that have been proposed for eParticipation, after which the concept of societal participation self-efficacy is defined and discussed.

2.4.1 Young people's societal participation

Young people, or youth, are defined in the ALL-YOUTH project as people between the ages of 16 and 25. In United Nations (2013), youth is defined as a period of time between childhood and adulthood, and more specifically for statistical purposes between the years of 15 and 24. The Finnish Youth Act (In Finnish, Nuorisolaki, 2016, 1:3.1 §) defines all under 29 years of age to be part of the demographical group called youth. In the context of this thesis, young people, youth, and youths are used to denote the people or groups of people, who identify within the period of transitioning from childhood to adulthood. The participants in the studies underlying this thesis were all between 15 and 32 years. The demographics are discussed in more detail in section 3.3 Sample Demographics Summarised.

Various approaches to the definition of societal participation exist. Some scholars argue that participation has not been explicitly defined (E.g., Piškur et al., 2014; Weiss, 2020) while others emphasise the complex and multidimensional nature of societal participation (E.g., Hästbacka et al., 2016; Ekman & Amnå, 2012).

However, attempts to outline, characterise, and even to define participation and societal participation exist.

Participation ("*osallisuus*") in the Finnish context is defined by the Finnish National Institute for Health and Welfare (THL) in four dimensions:

"1) The ability to decide about one's own life and the possibility to regulate one's own doings, 2) engaging in processes that have effects in groups, services, living environments, and in the society, 3) local, when one is able to participate and contribute to the common good, and 4) to engage in creating meaningfulness and experience social relationships" (PI, p. 1; Isola et al., 2017). Analogous to this, Kahne et al. (2013) assert that interest-driven participation is an essential predictor for likelihood to engagement - i.e., the experienced relevance of the discussed matter increases the probability of participation. Moreover, participation is for instance affiliated with citizenship and can be outlined as a category of strategic power redistribution in which people are included in political and societal processes (Arnstein, 1969). The possibility for public participation can be seen as an essential requirement in democracy (Renn et al., 1993). Hästbacka et al. (2016) affiliate societal participation with various areas in society such as political participation, work, and education.

Van Deth (2001) lists definitions for political participation by Milbrath & Goel (1977), Verba & Nie (1972), Kaase & Marsh (1979), and Parry et al. (1992), which are similar in the sense that they all assume a citizenship in which individuals and groups actively aim to influence governing actors. Furthermore, Van Deth (2001) summarises these definitions as a group of activities that are aimed for political decision influence exercised by citizens. Checkoway and Gutierrez (2006) have included in the definition of participation the aspect of the young people actually making a difference through participation in the decision-making processes instead of merely being the targets of decisions and governing. On a more subjective level, Frieß & Porten-Cheé (2018) refer to this as perceived participatory effects and further affiliate it with individual level experience of democratically relevant meanings.

Societal participation can also be defined in a more tangible way as an attribute for activities. However, there are differences between disciplines and traditions in whether or not an activity should be attributed as societal participation. Furthermore, the basis on which an activity is attributed as societal participation, are temporally dynamic and change over the course of time. Harris et al. (2010) for instance attribute activities of individuals or groups such as belonging to a political party and participating in party activities as societal participation. Adler and Goggin (2005) operate with the concept of civic engagement, which can be seen as another

expression for societal participation, and to which they attribute community services, collective actions, and political involvement. More specifically they (Adler & goggin, 2005) refer to activities such as donating blood, mentoring youths, voting, or contributing to political party activities. Macedo and Alex-assensoh (2005, p. 6) summarise civic engagement as *"any activity, individual or collective, devoted to influencing the collective life of polity."* Hästbacka, Nygård and Nyqvist (2016) emphasise the complex and contextual nature of societal participation, and affiliate the concept to various sectors of society, including professional life and political activities.

Societal and political participation are occasionally used interchangeably. However, scholars have provided dissimilar definitions and elaborations on these two concepts. In a way, political participation can be seen as a subsection of societal participation. For instance, Encyclopaedia of the Social & Behavioural sciences (Wright, 2015) attach aspects such as voluntary activities, mass public, influencing public policies, with political participation, and affiliate it with activities such as voting, political campaigning, donating money, or petitioning. Analogously, van Deth (2001) emphasises the connection of political participation to influencing decision-making. Weber et al. (2003) affiliate political participation with activities that include voting, attending meetings, contacting governmental representatives, and taking part in NGO or political organisation activities.

Although enabling societal participation for citizens may require resources due to planning, preparations, and flexible processes, societal decisions benefit from enabling the citizens to participate as *"the public is in principle capable and wise in making prudent decisions"* and enhance the acceptance, i.e., legitimacy of the decision (Renn et al., 1993, pp. 209). Sarrica et al (2010) argue for a more inclusive conception of participation and citizenship through recognising young people as real citizens instead of citizens-in-the-making, i.e., unfinished citizens that need to be educated and are not considered capable of making a difference. In similar lines, Mycock & Tonge (2011) argue that young people are seen as citizens in the future instead of present, and that young people's needs are interpreted in an adult-centric way.

The dichotomous approach to societal participation through activity and inactivity has been criticised as an exceedingly simplifying and static approach. Amnå & Ekman (2014) propose a framework with higher granularity to societal participation in which different kinds of states of passivity are recognised and provide a further elaboration on latent participation. Examples of these activities include for instance consumer behaviours, boycotting products, or conducting online activities that aim to have an effect on societal matters.

In the context of this thesis, societal participation is operated through its broad definition. This means that in addition to including formal activities affiliated with political participation, it also considers activities that are traditionally seen as informal, non-institutional, and considered less parliamentary in their nature - also known as latent forms of participation as elaborated above (Stolle & Hooghe, 2011; Ekman & Amnå, 2012). Moreover, this thesis aims to explore and elucidate how young people themselves define and operate on the concept of digital societal participation, as discussed in section 1.3. Research scope and questions.

Societal participation in online settings is preferred by young people (Xenos & Moy, 2007; Weber et al., 2003; Omotayo & Folorunso). Hence, digital participation and eParticipation are discussed in the next section.

2.4.2 Digital participation and eParticipation

Although similarities can be seen between the conceptualisations of digital participation and eParticipation, in the context of this thesis, they are approached through different theoretical framings. More specifically, this thesis asserts that eParticipation can be referred to as a subdomain in digital participation.

Instead of strictly limiting the conceptualisation definition to listing activities, Meriläinen et al. (2018) affiliate digital participation similarly as Khan et al. (2014) with factors such as information technology and media skills, how they are divided among citizens, and the user's socioeconomic demographics. Moreover, Meriläinen et al. (2018) link digital participation of young people with personal and political identity development and refer to Collin (2008). Alfredsson Ågren et al. (2019) operationalise digital participation into factors and activities such as access to or owning internet-enabled devices, finding and understanding new information online, communicating with friends and family, consuming online contents, and shopping online. Moreover, Mercea (2012) defines digital prefigurative participation as the computer-mediated communication and interactions between users and contents that precede activities such as offline protests or demonstrations. Digital prefigurative participation may refer to for instance online measures for mobilisation, promotion, recruitment, and identity-building (Ibid). Digital participation and other online activities are regarded as possible gateways to participation in civic and political contexts through lowering the thresholds of volunteering, solving problems in a community, protesting, and other ways of civic engagement (Kahne et al., 2013).

Electronic participation, i.e., eParticipation, refers to such forms of societal participation in which ICT technologies are applied at individual, group, or governmental policy-making entities levels (Albrecht et al., 2008). Moreover, in eParticipation, the central role of information and communication technologies is emphasised and seen as a crucial factor for enhancing participation and citizen engagement (Panopoulou et al., 2014). The Internet is especially considered as an essential enabler (Sæbø et al., 2008). eParticipation is affiliated with deliberative participation in political and decision-making processes. It is also seen to inherently aim for enhancement of active citizenship through promoting accessibility and availability of different ways for engagement. This is affiliated with the possibility to develop more fair and efficient societies and governing processes, and underlines the possibility to enable participation in both, formal and informal settings (Sæbø et al., 2008). Polat (2005) elaborates on the relationship of the Internet and political participation through a three-way division of the Internet as an enabling factor in providing information, functioning as a communication medium, and functioning as a public sphere for discussion. At a less abstract level, eParticipation can be used to refer to the specific digital online services that are used to conduct societal participation (Nilsson et al., 2019).

Societal participation and the various interactions between citizens and the governing entities and officials increasingly happen in online settings (Xenos & Moy, 2007; Auxer, 2020; Van Kessel et al., 2020). By making it possible to participate in societal issues through online means, it may be possible to enhance equal access to participation as differences in the inclination for participation between different kinds of young people may be mitigated (Flanagan & Levine, 2010).

The conceptualisation and characterisation of eParticipation can be approached more tangibly at the activity level also. It is thought to include activities such as voting, discussing politics and contributing to decision-making in online settings (Sæbø et al., 2008). One eParticipation characterising activity is thought to be making contributions to a shared process that is connected to or feeds into decision-making and is conducted with the help of information and communication technologies and usually online (Sanford & Rose, 2007).

Digital participation and eParticipation do not solve all the challenges of societal participation. Oser et al. (2013) operate on the concept of online activism, which they define as a domain in digital participation and assert to incorporate similar shortcomings as non-digital participation: Socioeconomic status and backgrounds of individuals are correlated with the possibilities and tendencies to participate. More specifically, likelihoods for participation are related with factors such as education

level, wealth, age, and gender, and thus reflect accumulation of participation possibilities and tendencies to those who are initially empowered (Oser, et al., 2013). Similarly, Livingstone & Helsper (2007) assert that digital participation can be linked to divides including how females and working-class youths benefit less from ICT than males and middle-class in regard to participation possibilities. Analogous to this, according to Panagiotopoulos et al. (2011) household income is in a positive correlative relationship with the likelihood to participate in societal issues online. Kahne et al. (2013) emphasise that online platforms do not independently by default sustain, promote, or facilitate societal participation.

2.4.3 Models and frameworks for participation and eParticipation

In addition to abstract and theoretical conceptualisation of eParticipation, also more tangible models and frameworks have previously been proposed. eParticipation have in before been approached through domains of stakeholders, (Kalampokis et al., 2008), service acceptance (Panopoulou et al., 2018), descriptive models (e.g., Sæbø et al., 2008; 2010), and taxonomies (Eg., Sæbø et al., 2008; Susha & Grönlund, 2012). Moreover, Lukasz Porwol (2016) proposes an integrative framework for describing various eParticipation perspectives.

The domain model for eParticipation proposed by Kalampokis et al. (2008) provides characterisation of eParticipation through identification and description of various eParticipation dimensions and offers formal description of the aspects' relationships. The model consists of three main components: Stakeholder, Participation process, and ICT Tool. The stakeholder component can be further divided according to the classification attribute of roles and a dichotomy whether the stakeholder belongs to a benefiting or moderating/administering class. Role attribute includes values such as Owner / Initiator, Moderator / Facilitator, Decision maker, Input Provider. Participation process subdomain contains attributes of participation level, technique, area, and policy cycle stage. Participation level is related to the classical modelling of participation ladders, in which participation is further divided into informing, consulting, involving, collaborating, and empowerment (e.g., Arnstein, 1969). Participation technique refers to the methods that officials apply to engage citizens. Participation area denotes the specific way in which the participation is conducted through. This attribute can have values such as polling, voting, discourse, consultation, and deliberation. Moreover, the policy cycle stage attribute includes categories of agenda setting, analysis, monitoring, policy

creation, and policy implementation. Finally, the ICT tool subdomain consists of attributes of channel, technology, and tool category. Channel denotes the hardware and includes categories PC, mobile, and kiosk. Technology refers to the solution categories, which includes values such as collaborative environment, argumentation support system, and knowledge management. ICT tools subdomain includes the tool category attribute which provides characterisation of the service and enables attributing values such as ePetition, eVoting, eConsultation, e-Poll, GIS, chat rooms, and combined collaborative system to an eParticipation service. (Kalampokis et al., 2008.)

eParticipation acceptance model proposed by Panopoulou et al. (2018) can be seen to be related to technology acceptance model (Davis, 1986; 1989; 1993; Venkatesh et al., 2003). Technology acceptance model enables appraisal of various technologies and digital services through the dimensions of perceived usefulness, perceived ease of use, and behavioural intention to use the tool or service, which together contribute to the construct of acceptance. The construct of technology acceptance is covered in more detail earlier in section 2.3.2. User experience. In addition to these dimensions introduced in technology acceptance model, Panopoulou et al. (2018) propose including concepts of technological self-efficacy, integration to governmental processes, perceived facilitating conditions, and social influences as crucial factors to technology acceptance in eParticipation contexts. The concept of technological self-efficacy denotes an individual's expectations and perceptions regarding their resources, skills, and knowledge in relation to a task and the corollary outcome possibilities. Self-efficacy is contextualised and further discussed in section 2.4.4. Societal participation self-efficacy. The concept of integration to governmental processes describes how an eParticipation service relates to decision-making, officials, institutions, and governing procedures and how it enables interaction between citizens and the governmental processes. Integration to governmental processes is highly affiliated with perceived usefulness of the system and perceived facilitating conditions. Perceived facilitating conditions denotes the user's expectations and perceptions regarding the organisational and technical infrastructures for the eParticipation service. More specifically, factors such as moderation, trust, privacy, transparency, and inclusiveness contribute to perceived facilitating conditions. Finally, the concept of social influences in eParticipation acceptance model refers to how socially important the usage of an eParticipation service is perceived by a user, i.e., how a user perceives the relatives, friends, policy makers, and celebrities' sentiment towards the eParticipation service. Although the concepts of perceived usefulness, perceived ease of use, and behavioural intention

to use the tool or service are introduced alongside with the technology acceptance model in 2.3.2. User experience, they are obviously contextual and need to be approached with regard to the complex concept of participation in eParticipation contexts.

Sæbø et al. (2008) propose a model that is based on a literature review addressing 131 papers. The model places various eParticipation activities in the center. These activities include eVoting, online political discourse, online decision-making, eActivities., and eConsultation. The model further proposes that these activities are conducted by actors, which refer to citizens, politicians, government institutions, and voluntary organisations. According to the model, these activities result in civic engagement related, deliberative, or democratic eParticipation effects, and are highly affiliated with contextual factors such as information availability, infrastructure, underlying technologies, accessibility, policy issues, and governmental organisation. Finally, the model also incorporates eParticipation evaluation, which denotes factors such as quantity, demographics, and tone and style. Also, the scholarly theories and research methods are recognised in the model, but not as a practical and integral factor, and semantically positioned at the margin.

The research conducted by Porwol (2016) suggests an integrative framework for exploring eParticipation through democratic, project, and socio-technical perspectives based on synthetisation and elaboration of previous models and frameworks touching eParticipation.

However, the previous participation models of participation have been criticised by for instance Grönlund (2009) for their simplicity and lack of applicability. Moreover, the previous models can be regarded as rather process and system oriented and they fail to recognise citizens and participation in a holistic manner. More specifically, the existing models do not enable operating on participation through external and internal levels of an individual explicitly and reflecting their relationship with the activity level of participation.

2.4.4 Societal participation self-efficacy

Self-efficacy can be thought of as a construct that reflects the beliefs and expectations of people that they have on their abilities in relation to a task or a process. More specifically, perceived self-efficacy can be defined as an individual's internalised approximation of one's own *"capabilities to organise and execute the courses of action required to produce given attainments."* (Bandura, 1995, p. 3). In the context of

human behaviour and factors that steer activities, beliefs of one's resources in relation to the tasks or goals are of paramount importance. These beliefs, i.e., self-efficacy, have an influence over the thinking patterns, motivations, and actions of an individual. Self-efficacy seems to contribute to aspirations, strategy selection when approaching new problems, committing to goals, and resilience (Bandura, 1995; 2006). The processes that self-efficacy has been thought to rely on include mastery experiences, learning from social models, and external persuasion. Also, physiological states and affectivity of the behavioural opportunities and situations play key roles in the formation of self-efficacy (Bandura, 1995; Williams & Rhodes, 2016).

When studied, self-efficacy is often contextualised and operated in relation to a field, domain, or an activity and its measurements are tied with particular tasks (Bandura, 2006; Latikka et al., 2019). In the contexts of societal participation, self-efficacy related internal attributes function as predictors of participation likelihood, modes, and outcomes. Societal participation related self-efficacy is thought to have a positive correlative relationship with democratic stability (European Social Survey, 2016; Solhaug, 2016). Societal participation self-efficacy can be seen to be evolved from the concepts of political efficacy (Campbell et al., 1954) and internal political efficacy (Almond & Verba, 1963). Campbell's definition emphasises the duality of the concept as it addresses the experienced overall possibility for political change and the experienced possibility of one's subjective contribution as a factor in the change. Moreover, Almond & Verba's internal political efficacy stresses the importance of the individual's experienced capacity to influence. This thesis operates on societal participation self-efficacy instead of political self-efficacy to enable explorations in participation in a broader scope, as was discussed in section 2.4. Societal participation in which the concepts of societal and political participation are introduced.

2.5 HCD and UX in the context of eParticipation

Although user experience provides grounds for various approaches to studying and analysing interactions with digital services and information systems it seems that the studies on eParticipation and digital participation that implement approaches from HCD and UX are limited in their number and in their depth. This section introduces publications that discuss applying HCD and UX related methods in eParticipation contexts from a methodological point of view. For instance, Luna-Reyes et al. (2011)

discussed the topic of applying HCD methods in eParticipation contexts. However, the empirical contribution of the study only incorporated an initial and institutional-centric questionnaire. Furthermore, Taylor-Smith & Buckner (2009) applied scenarios in their eParticipation design study and reflect on their experience. Sæbø et al. (2009) were able to elucidate user expectations in their study whereas Basri et al (2019) employed a think aloud method to expose various interaction problems with an existing eParticipation service. Moreover, the relationship of eParticipation and user experience have been studied before in the perspectives of an individual's eParticipation activity intensity and perceived participatory effects (Frieß & Porten-Cheé, 2018).

Luna-Reyes et al. (2011) discuss the design processes of eParticipation services through division of three approaches: Front-end citizen-centered approach, back-office citizen-centered approach, and an intermediate approach. Regarding the front-end approach, they elaborate on implementing user-centered design techniques and approaches in development of eParticipation services and summarise key actions such as initial feasibility study of user requirements, and commitment from behalf of the governing actors to a citizen-centered vision. Back-office approach can be summarised to focus on the interactions between governing actors and citizens and how the eParticipation service is integrated to the societal processes. Finally, the intermediate approach is said to aim to answer questions such as *"...who are the users? What are their goals? How can they achieve their goals?"* (Luna-Reyes et al., 2011, p. 215).

Taylor-Smith & Buckner (2009) discuss working with scenarios in their study on eParticipation services and summarise eParticipation design problem as the aim of creating sustainable initiatives. Their study proposes that through working with the scenarios they were able to reveal various roles and functions for eParticipation services and that applying scenarios supported the structural design of a forum. However, they did experience methodological challenges as the participants varied in how adapt they were to work with scenarios and how to instruct working with the scenarios if not meeting with the participants in person. They conclude that using scenarios was a successful non-burdensome technique to acquire the participants' visions.

Sæbø et al. (2009) incorporated the wide audience requirement engineering method (WARE) in their study on eParticipation services among young people in Norway. WARE is a methodological approach which aims to enable design of systems which concern wide and heterogenous user groups. WARE may mitigate the challenges of reaching users, and conflicting and unspecific user needs. They suggest that applying WARE enabled their study to reveal expectations regarding the

characteristics and attributes of eParticipation services, and how these attributes should be implemented, and what value they would bring to the users.

A study by Basri et al. (2019) introduces the evaluation of an eParticipation service with an emphasis on UX approach. They executed a series of laboratory tests in which the think aloud method and questionnaires were employed. Through the think aloud method they were able identify various units of thoughts which were categorised into content, design, and information architecture. Content included factors such as information content language, and relevance. Design consisted of layout, fonts and images, and background / foreground. Finally, the information architecture was composed of navigation, scheme, and link button / text contents. They continue to assert that this method enables identifying such factors and interaction problems that are highly relevant in developing better eParticipation services.

Frieß & Porten Cheé (2018) suggest that intensity of local eParticipation is affiliated with perceived participatory effects, more specifically the constructs of tolerance and common good. In their study they also operated on the concept of internal political self-efficacy. By tolerance they refer to acceptance and understanding of diverse or conflicting perspectives and by common good they mean being considerate of other citizens and contributing to a shared goal. Their study, however, did not observe a statistically significant relationship between participation intensity and internal political self-efficacy.

2.6 Research gap

Reflecting on the related works and previous studies on eParticipation, it is possible to infer that systematically approaching eParticipation through a human-centered design process has been limited or even non-existing. More specifically, the user needs of young people for eParticipation, and digital participation have been left unexplored. It seems so that especially the segment of young people, which have not previously been able to take part in societal issues or been interested in societal participation, have been somewhat neglected in regard to their user needs for digital participation and eParticipation services.

Moreover, although the impacts of eParticipation services on the governing processes and decision making have been studied, the studies on the effects of using eParticipation services on the users, i.e., citizens, are scarce or do not exist besides e.g., the study by Frieß and Porten Cheé (2018). It seems so that the effects of

eParticipation service usage on users and more specifically for instance on their societal participation self-efficacy have not been previously studied.

Additionally, although various eParticipation services have been developed, challenges such as complexity and inability to meet user expectations (Toots, 2019), varying ICT and media literacy skills of users (Meriläinen, 2018), and varying information retrieval skills (Maier-Rabler and Huber, 2010) remain. These challenges can be seen to be affiliated with for instance the elaborations by Panagiotopoulos (2011) and Carman (2010): Poorly designed and implemented eParticipation services may not be seen as legitimate by citizens and thus will not reach their potential in regard to their impact and significance. These notations reflect the need for research on how the eParticipation services should be designed, developed, and implemented, what are the young people's user needs in regard to digital participation and eParticipation, and how the user needs should be considered.

3 EPISTEMOLOGICAL DISPOSITION, METHODOLOGY, AND METHODS

This chapter establishes the positioning of the thesis in relation to scientific fields and traditions and provides contextualisation for the epistemological and methodological foundations. In this chapter, the thesis is attached to the philosophies of science and the research approaches are elaborated. Additionally, this chapter describes and rationalises the data acquisition and analysis methods of each study. Finally, an ethical elaboration is given.

3.1 Epistemological disposition and methodology

The main objectives for this thesis are to broaden the understanding of digital participation, and to provide information on what to consider when creating eParticipation services for youths, and to elucidate the mechanisms through which digital solutions may support societal participation. The main epistemological approach that this thesis incorporates is empiricism as the research philosophy relies on aiming at objectivity and generalisability, and systematically collected observations act as basis for the reasoning. However, the research also meets characteristics of pragmatism as the thesis recognises real-world problems and aims to find practical solutions to them. Additionally, this thesis acknowledges epistemic relativism especially through the discussions and theoretical work as multiple conflicting subjective experiences are recognised. The epistemic goals of the research underlying this thesis are mainly knowledge and understanding, whereas the non-epistemic aims regard promoting and broadening the possibilities for societal participation through providing practical solutions and propositions. (Resnik & Elliott, 2019; See also Elliott & McKaughan, 2014; Resnik, 2005.)

According to Jokinen (2015) HTI research can be methodologically approached through four distinct lenses: Behaviourism (Empiricism), neuroscience (Physicalism), subjectivism (Phenomenology), and cognitivism (Functionalism). Each of these can be related to two different higher-level characterizations: Causal explanations and intentionality, as described in Table 2. This thesis can be thought

to have characteristics that imply empiricism, phenomenology, and functionalism in the division proposed by Jokinen (2015). Empiricism is identifiable as four out of five of the publications constituting this thesis rely on empirical research settings and aim to broaden knowledge through empirically gathered observations. Phenomenologically this thesis aims to provide understanding of subjective experiences and recognises a relativistic standpoint which enables conflicting experiences to co-exist simultaneously. Additionally, cognitivist and functionalist approaches are present in this thesis as a holistic conception of a human is recognised and humans are seen as entities with physical, psychological, cognitive, emotional, and social dimensions.

		Causal explanations	
		No	Yes
Intentionality	No	Behaviourism (Empiricism)	Neuroscience (Physicalism)
	Yes	Subjectivism (Phenomenology)	Cognitivism (Functionalism)

Table 2. Jokinen's (2015, p. 33) approaches to HTI-research methodologies

Experience and user experience cannot be discussed without considering the concept of consciousness. The research in HTI can be approached through a methodological division proposed by Varela (1996), as represented in Figure 6. In Varela's approach, the concept of consciousness is set in the center and the different methodological conceptions are described through their relationship to consciousness.

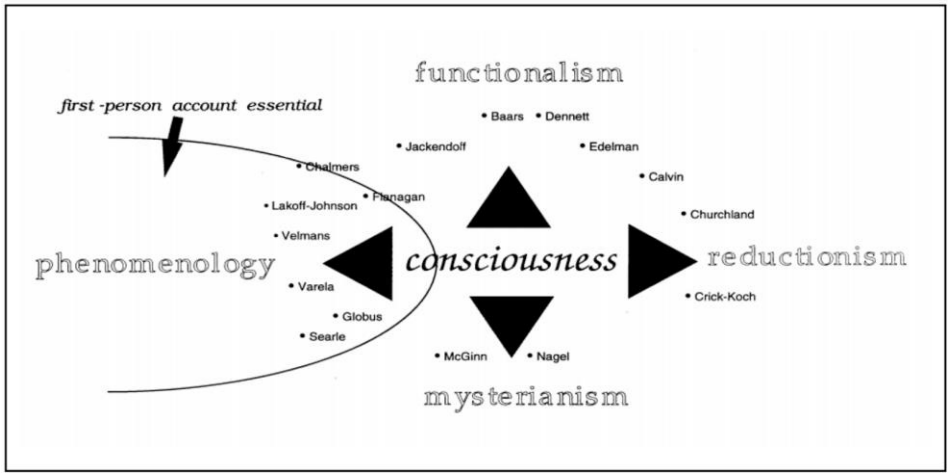

Figure 6. Varela's (1996) four-way methodological division

Although the studies that constitute this thesis are slightly more inclined towards empiricism in their epistemological nature, as a whole, this thesis aims to credit and account the subjective experience and thus recognizes also the importance of the phenomenological realm of knowledge concerning user experience and user psychology.

In scientific research contexts, the concept of triangulation refers to the act of approaching a problem or research question from multiple angles. More specifically, triangulation can be incorporated through applying multiple approaches, methodologies or methods in research (Lazar et al., 2009). Lazar et al. (2009) propose a simplification (Figure 7) of how various scientific disciplines may emphasise the different dimensions of HTI research processes. In the research underlying this thesis, these dimensions are used as the basis for the triangulation. The triangulation in this thesis is approached from theoretical, methodological, sampling-related, analytical, and practical dimensions. In other terms, this thesis applies triangulation that extends broader than just the methodological choices as multiple epistemic approaches have been incorporated. Overall, this thesis research can be attributed as a mixed-method as both quantitative and qualitative methods have been applied.

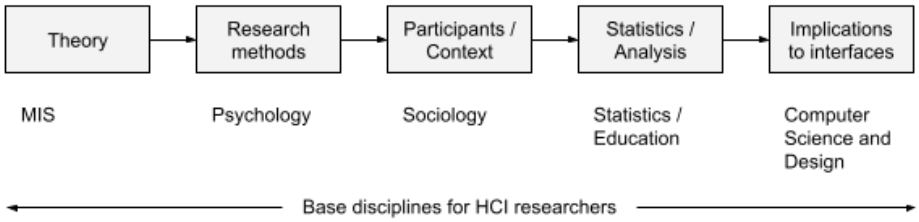

Figure 7. HCI research process dimensions emphasis in various scientific disciplines as proposed by Lazar et al. (2009, p. 13)

As discussed in 2.3.2. User experience, Battarbee & Koskinen (2010) summarise three approaches to research of user experience: Measuring approach, empathic approach, and pragmatist approach. This thesis can be seen to reflect characteristics of all of these approaches although no physiological measurements were conducted. Measuring approach is visible in the various surveys in which numerical reporting methods have been applied and which have been analysed with statistical methods. Empathic approach can be identified in the studies in which qualitative methods have been applied, and as the thesis aims to provide deep understanding of the young people's user needs in eParticipation and conceptualisation of digital participation. Moreover, the pragmatist approach mentioned by Battarbee & Koskinen (2010) is present in the studies that form this thesis as practical solutions are sought, and the social factors are discussed in addition to the individual factors. Pragmatist approach is also identifiable as the studies aim to broaden the understanding of young people's lives, situations, and subjective perspectives on digital societal participation and eParticipation (McCarthy & Wright, 2008).

Methodologically, this thesis applies quantitative and qualitative research approaches from human-centered design in HTI, psychometrics and applied psychology, and studies on political behaviour and public administration. More specifically in the field of HTI approaches and methodologies from HCD and participatory design can be identified in the iterativity and in including the end users in various phases of service design and development work. Moreover, surveys, experiments, comparative research, and interviews are used. Quantitative analyses include descriptive and inferential statistical methods. Thematic analysis and grounded theory are applied on qualitative data. Specific data acquisition and analysis methods are described in more detail in section 3.2. Research process, studies, and methods. Figure 8 summarises the applied research approaches, data acquisition methods, key constructs, and analysis methods.

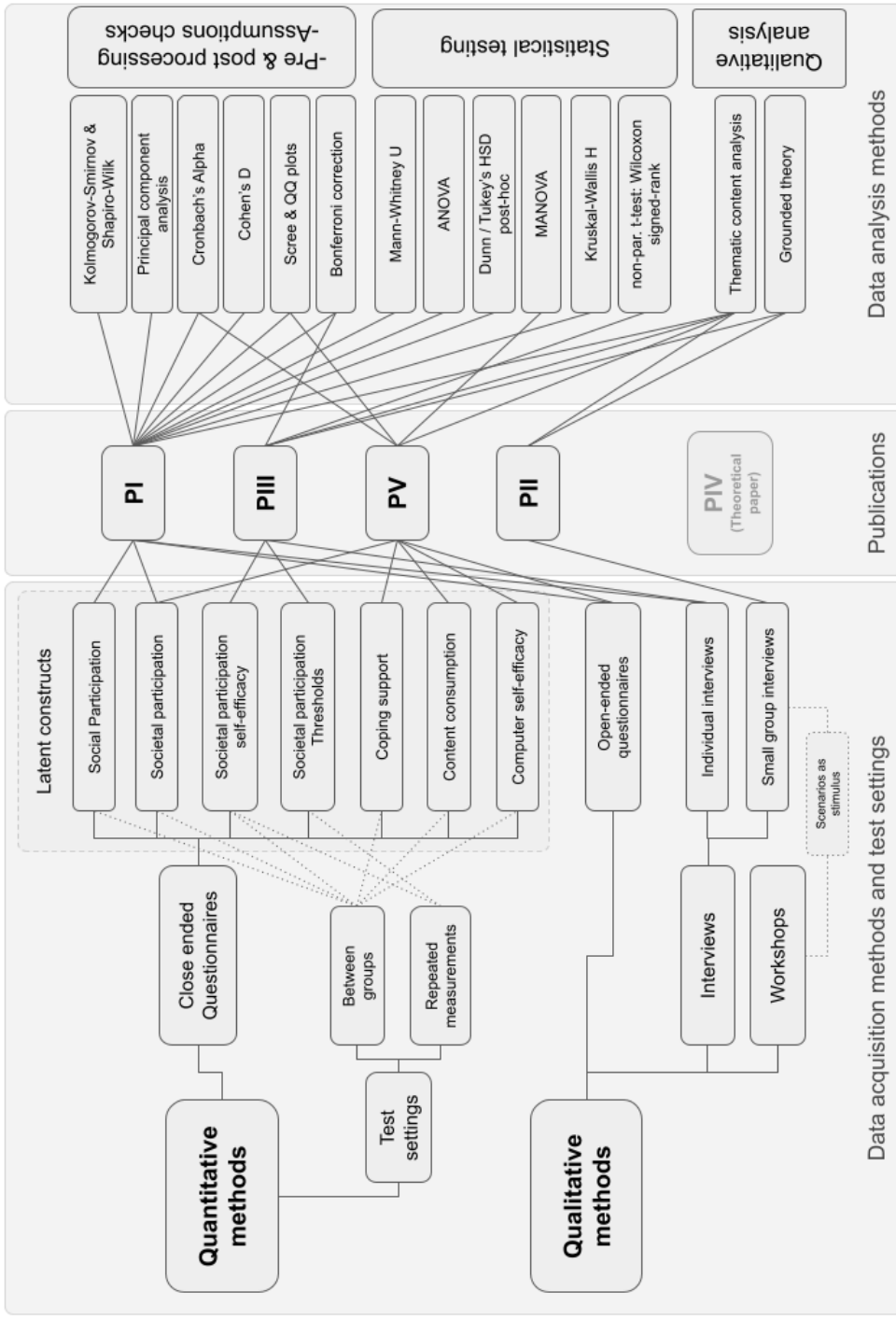

Figure 8. A diagram summarising the applied research approaches, data acquisition methods, key constructs, and analysis methods.

3.2 Research process, studies, and methods

Figure 9 describes the general timeline of the research underlying this thesis. Overall, 50 group or individual interviews were conducted, 11 workshops were carried out, and 360 questionnaires were collected. In these studies, altogether 467 persons participated as workshop or interview participants (107) and survey respondents (360). A summary of all the research approaches, and data acquisition and analysis method are described in Figure 8. Next sections describe the applied research methods in more detail at each study level. Although each study contributes empirically to only one publication, the individual studies and their corollary publications may contribute to more than one thesis-level research question as seen in Figure 1 and discussed in 1.3. Research scope and questions.

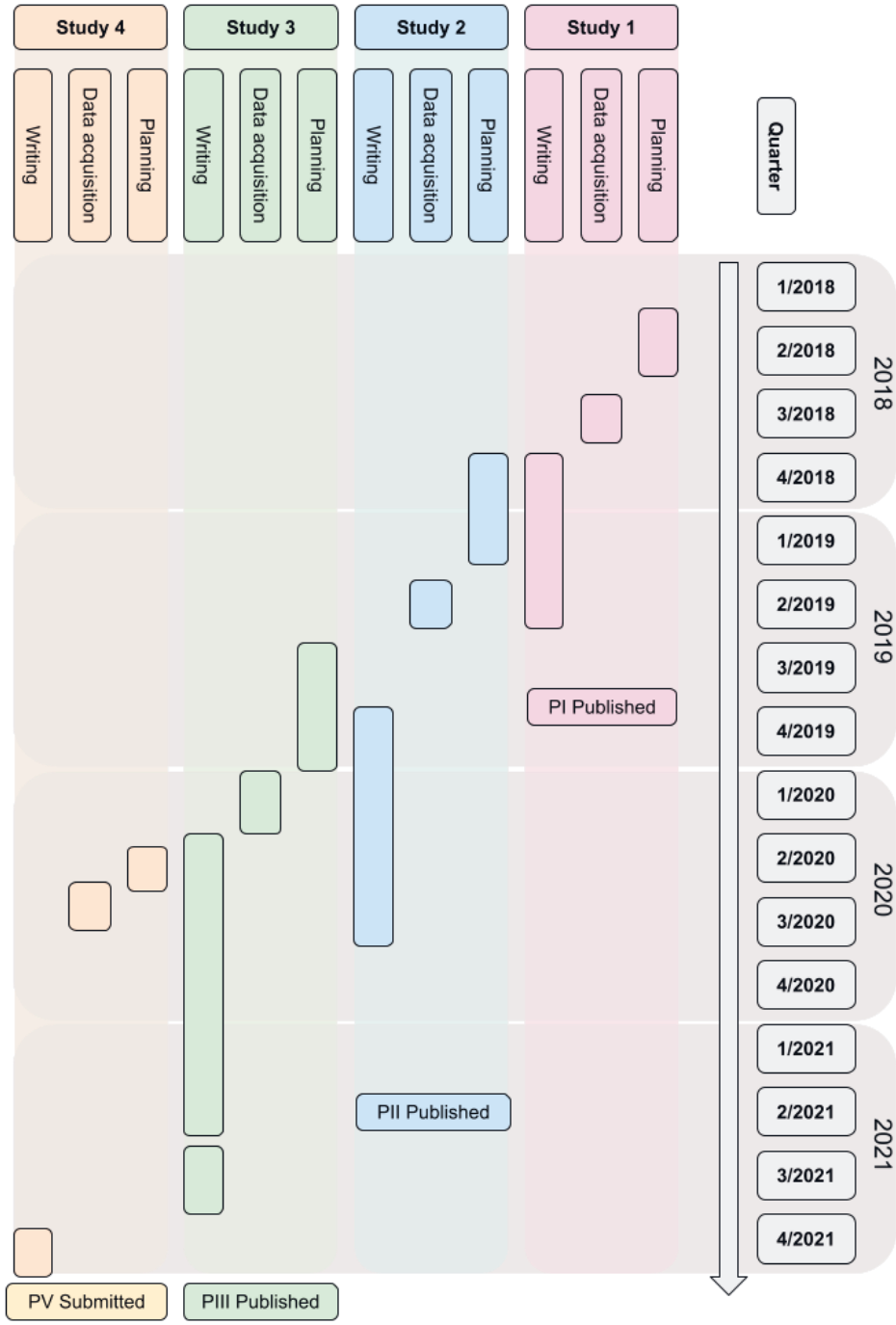

Figure 9. Overall timeline of the empirical studies underlying this thesis

3.2.1 Study 1: Understanding and conceptualising digital participation

To understand how young people perceive and conceptualise digital and non-digital societal participation, a mixed-method study applying survey and semi-structured interviews was conducted. This study aimed to explore the various perceptions that the Finnish youths have on digital societal participation and to elucidate the many digital activities through which young people participate in societal and democratic processes. Moreover, the study adduces multiple factors that young people experience to pose as obstacles for their societal participation.

Setting & Process: A questionnaire examining latent constructs such as digital and non-digital social participation, societal participation, and posing open ended questions concerning obstacles for societal participation was utilised. Additionally basic demographics such as age, gender, and educational background were inquired. The questionnaire was available online and on paper. The semi-structured interviews were between 17 and 69 minutes in length and covered themes regarding phenomena such as societal and digital participation and future plans and dreams. Data was acquired between 2nd and 5th of August 2018.

Participants: Altogether 277 answered the survey, and 25 participated in the interviews. Survey and interview participants were between 16 and 25 years of age, with a median of 20 years. Approximately one third of the respondents were under 18. Three out of four of the survey respondents were male. Two out of three of the interview participants were male. It is noteworthy that in this study, the sample poses a higher prevalence of digital gaming than in the general population, as the data was acquired in a gaming and digital culture event entitled Assembly.

Analysis: For analysis of the survey data, a Python script was prepared to apply the two-tailed Mann-Whitney-U test on multiple dichotomous variables. Furthermore, a factor analysis with principal component analysis (PCA) extraction method was applied for test variables with needed Kaiser-Meyer-Olkin (KMO) and Bartlett's tests. Moreover, the Kruskal-Wallis test and analysis of variances (ANOVA) were applied. Thematic content analysis and categorisation was applied on the interview recording transcripts.

Corollary publication, PI: Pietilä, I., Varsaluoma, J., & Väänänen, K. (2019). Understanding the Digital and Non-digital Participation by the Gaming Youth. LNCS Volume 11747, 2019, p. 453-471. Presented at 2019 IFIP TC13 INTERACT 2019.

Contributed to: Thesis-level research questions 1 and 3.

3.2.2 Study 2: Understanding user needs for digital participation

To understand the user needs and requirements that young people have regarding digital societal participation and eParticipation services, a qualitative study was conducted. In this study, semi-structured interviews were conducted in small groups and scenarios were used as stimulus material to elicit conversations. The study goal was to provide a deep understanding on how digital services that aim to enable societal participation should be designed and what kind of needs and requirements the young people have in regard to them. Furthermore, this study elucidates how the experienced obstacles for participation may be mitigated through digital solutions. Additionally, this study contributed to the design and development of an eParticipation platform prototype, Virtual Council.

Setting & Process: Altogether six workshops were conducted in southern Finland between February and April 2019. Each workshop had 4 to 25 participants which were further divided into small groups of 3-5 people, forming a total of 20 small groups. Each workshop included phases for introduction, scenario working, background questionnaires, and debriefing. Scenarios were displayed on a screen and read out loud. In each small group, there was a researcher facilitating the conversations and posing questions.

Participants: Overall 74 young people participated in the workshops. Participants were between 16 and 27 years of age. There were 36 male participants, 29 females, and 9 identified as other or did not want to disclose their gender. The study aimed to reach various youths, including those who had not accumulated much experience on societal participation before. Participant groups were recruited from settings such as preparatory vocational education, NGO / 3rd sector workshops, and general upper secondary education.

Analysis: Transcribed interviews were analysed applying thematic content analysis and categorisation was data driven with open coding. Moreover, the emerging themes were divided into four main categories of user need classes.

Corollary publication, PII: Pietilä, I., Meriläinen, N., Varsaluoma, J., & Väänänen, K. (2021). Understanding youths' needs for digital societal participation: towards an inclusive Virtual Council. Behaviour & Information Technology. Taylor and Francis.

Contributed to: Thesis-level research questions 2 and 3.

3.2.3 Study 3: eParticipation for supporting societal participation self-efficacy and lowering the thresholds of societal participation

The third study aimed to provide understanding of how digital solutions can support and enhance societal participation of young people. More specifically the study explored the possibilities of an eParticipation platform Virtual Council contributing to lowering the thresholds to participate and promoting societal participation related self-efficacy.

Setting & Process: A use case of Virtual Council was created in collaboration with the Ministry of Environment for climate legislation renewal. A week-long test study requiring a minimum of three use sessions was designed around the case. Three different online questionnaire sets, and semi-structured interviews were applied in the series of eParticipation platform test studies. A before and after measurements style study setting was applied to elucidate possible short-term effects on societal participation related self-efficacy and societal participation thresholds.

Participants: Altogether 34 people between ages of 15 and 32 years with different backgrounds participated in the test studies. Median age of the participants was 21.

Analysis: Statistical testing was applied on the between and after measurements difference. More specifically, the non-parametric equivalent of the t-test, related-samples Wilcoxon signed-rank test was applied with Bonferroni correction. Qualitative data was analysed through categorisation and thematic content analysis with a grounded theory approach.

Corollary publication, PIII: Pietilä, I., Lähde, M., Varsaluoma, J., & Väänänen, K. (2022). EParticipation for Supporting Societal Participation Self-efficacy and Lowering the Thresholds of Societal Participation: Case Virtual Council. In CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI EA '22). Association for Computing Machinery, New York, NY, USA, Article 31, 1–8.

Contributed to: Thesis-level research questions 3 and 2.

3.2.4 Study 4: Digital solutions supporting societal participation in COVID-19 lockdowns

The goal of the fourth study was to explore what kind of subjective experiences young people have in regard to digital services, digital societal participation and social interactions during the COVID-19 corollary early lockdowns. The study investigates how digitality supports the everyday lives of young people during COVID-19 and explores how the differences relate to ICT adeptness.

Setting & Process: An online survey study utilising closed ended questions and open-ended questions was conducted. Five constructs were assembled to represent digital technologies and services supporting coping, societal digital content consumption, active participation, anteceding societal participation, and computer self-efficacy. Construct measurements were implemented as Likert-scale sets. Additionally, four open-ended questions regarding participant's experiences on how the digital technologies have supported them during the lockdowns were included. Data was collected during April and May in 2020.

Participants: Overall, 49 young people from Finland participated. They represented 22 different municipalities and were between 15 and 26 years of age with the median age of 21 years. Groups such as basic education students, general and vocational upper secondary students, university students, full-time and part-time employed, unemployed, and rehabilitative activity participants were represented in the sampling.

Analysis: Statistical testing was applied on the closed-ended questions. More specifically, multivariate analysis of variance (MANOVA) was utilised. Qualitative data (Answers to the open-ended questions) was analysed through categorisation and thematic content analysis with a grounded theory approach.

Corollary publication, PV: Pietilä, I., Kallio, J., Meriläinen, N., Varsaluoma, J., & Väänänen, K. (2022). Digital solutions supporting young people's societal participation during the early stage of COVID-19 lockdowns in Finland. Under review in Government Information Quarterly. Elsevier.

Contributed to: Thesis-level research questions 3, 1, and 2.

3.3 Sample demographics summarised

In the four empirical studies that form this thesis, altogether 467 persons took part in workshops and interviews (107), and surveys (360). Age information is available from 425 participants. Participants were between 15 and 32 years of age during the studies, and the average age of the participants was 20 years, median age 20 years, and mode 16 years. In the overall sampling, age had the standard deviation of 3.44. Information regarding gender is available from 416 participants. Out of these, 128 (29.4 %) reported female as their gender, whereas 278 (63.9 %) reported male. Furthermore, 10 participants (2.3 %) reported their gender as *"other"*. The overall bias between the frequency of different genders in the sampling is heavily affected by the first study survey section demographics, which had the largest sample size of the studies. The data acquisition took place at a gaming and digital culture event, in which a significant portion of the attendants are male. Age and gender distributions are described in more detail in Figure 10. Possible discrepancies in quantities are due to missing values.

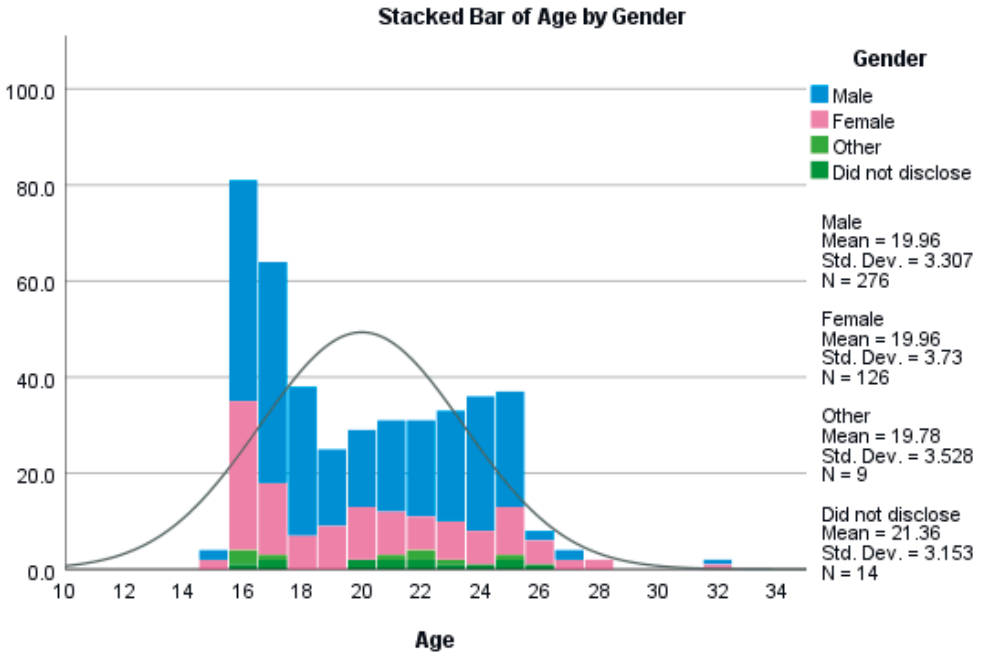

Figure 10. Age and gender distributions of the overall sample, N = 425

Employment status was available from 421 participants and visible in Figure 11. The vast majority, 69.4 % (292) of the participants were students in primary school,

general upper secondary education, vocational upper secondary education, or in higher education. At the time of the studies, 13.5 % (57) were employed, whereas 8.8 % (37) were unemployed. The number of participants that were on sick leave or retired was 1.2 % (One participant). Thirty (7.1 %) participants stated that their employment status was something else. Furthermore, the education level was available from 416 participants and further described in Figure 12. Over one third of the participants (40.4 %, 168) reported primary school as their highest finished education at the time of the studies. Almost one fourth (24 %, 100) had general upper secondary education (Highschool) as their highest education. Slightly less, 22.1 % (92) had graduated from vocational upper secondary qualification. Just over 10 % had attained a university degree: 10.1 % at bachelor's level and 2.2 % at master's. One participant had obtained a doctorate, and four participants reported their education level as *"other"*.

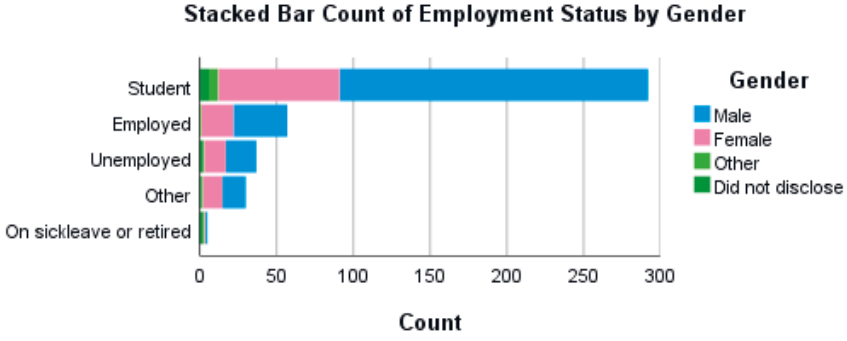

Figure 11. Employment status of the overall sample, N = 421

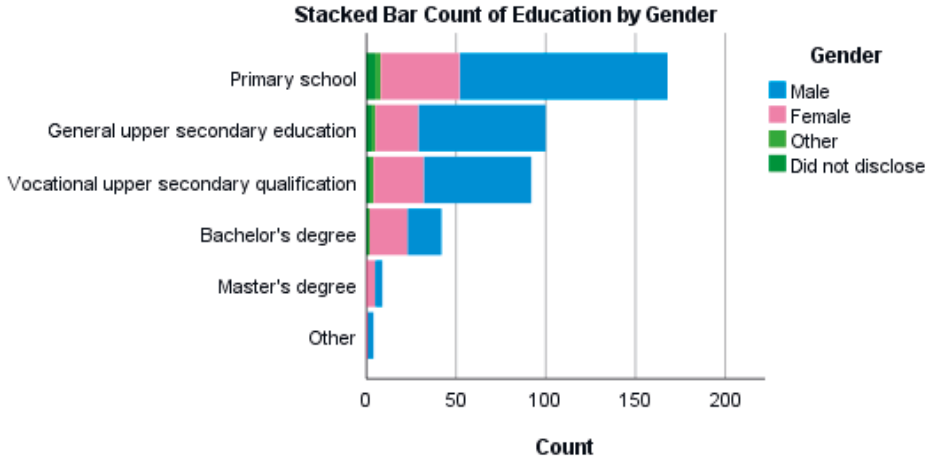

Figure 12. Education level of the overall sample, N = 416

3.4 Research ethics

The conducted research adheres to the recommendations outlined by Finnish Advisory Board on Research Integrity, TENK. No external ethical review was required regarding the research plans before implementation as the participation in the research did not deviate from the principle of informed consent, no intervening of the physical integrity of the participants was involved, and participants were not exposed to exceptionally strong stimuli. Moreover, no risks of causing mental harm exceeding the limits of normal daily life to the participants were identified, and no threats to the safety of the participants were identified. All the participants were 15 years of age or older at the time of studies. Moreover, in settings such as schools and other public institutions, it is mandatory to apply for research permits in advance. These permits were applied and granted accordingly. (Kohonen et al., 2019.)

All the participants gave their explicit informed consent to participate in the studies. The participants were given comprehensive information regarding the research aims, procedures, settings, project funders, data management, pseudonymisation and anonymisation, application areas, and how the research results will be published and disseminated. It was always established that participation is voluntary, and a participant can cancel and withdraw at any moment.

Data management was planned beforehand and followed the guidelines by Tampere University and Finnish Advisory Board of Research Integrity. Digital materials such as survey responses and interview recordings were stored on network drives managed by Tampere University. Physical materials such as workshop products and survey responses in paper format were stored on campus in a locked cabinet in a locked office. Only researchers affiliated with the project were given access to the research materials on a needs basis. Written consent forms were stored separately, also in a locked container.

4 RESULTS

This section describes the results of the individual publications and answers the research questions of this thesis. First, the results are summarised at the publication level and overview of each publication's key findings are provided. After this, each of the thesis-level research questions are answered with the study results.

4.1 Summary of results per publication

PI Understanding the Digital and Non-digital Participation by the Gaming Youth. The first publication provides theoretical and pragmatic contributions. The publication contributes to the theoretical continuum of digital participation conceptualisation and proposes design implications for eParticipation services. More specifically, the publication suggests that digital participation is highly affiliated with social media use, activity in discussion forums, creating digital content, answering digital surveys, voting, starting citizen's surveys online, and taking part in political discussions. Also, obstacles for participation such as lack of interest, lack of information, fear of conflicts, lack of time, age, negative expectations towards potential effect, and privacy issues were found. Finally, the publication proposes the following design implications or goals for eParticipation services: Providing a safe environment for youth participation, offering information that entices participation, matching digital participation to personal needs, and rewarding participation.

PII Understanding Youths' Needs for Digital Societal Participation: Towards an Inclusive Virtual Council. The second publication contribution is mainly pragmatic in its nature. The publication proposes ten different user needs further grouped into four main categories: 1. Trust and safety, 2. Motivation to participate, 3. Integration to governmental politics, and 4. Efficient and effective use. Category of trust and safety includes needs such as safe discussion environment, moderation, rules, anonymity, and familiarity of the service. Category of needs related to motivation to participate consists of factors such as personally interesting topics, rewards, competitive settings, and adequate number of users. Moreover, the category of needs related to integration to governmental processes includes having

a real impact, actively participating officials and decision-makers, frequent interactions and feedback loops, and information representation of the status of the topic. Finally, the category of needs related to efficient and effective use regards factors such as useful search and filtering features, tagging, topics, possibility to volunteer for upcoming discussions, informative materials, and possibilities to integrate and/or to link to 3rd party materials. Also, the publication introduces the prototype of Virtual Council and discusses how the user needs can be responded to.

PIII eParticipation platforms for supporting the self-efficacy of diverse youth: Case Virtual Council. The contribution of the third publication is mostly empirical in its nature and the results add to the discussion on the connections between young people's use of digital services and societal participation. The results suggest that the young people who are less experienced in societal participation, may benefit from using eParticipation services in regard to their societal participation related self-efficacy in the short term. Also, the results suggest that using eParticipation services may contribute to lowering the thresholds of taking part in various forms of societal participation activities, such as contacting MP's, ministers, or local politicians, supporting ideological groups or communities by liking their social media pages, sharing something political online, and supporting a cause by using a badge or profile picture on social media services. Furthermore, the results suggest that the mechanisms and factors, which may contribute to lowering the thresholds include attributes such as ease of use and clarity, enhanced societal empowerment and activity, safe environment for discussion, well implemented features that support participation, interesting themes, and impression of having an effect and reaching the decision-makers.

PIV Citizen-centric socio-cognitive model for societal participation. The fourth publication is theoretical. The publication proposes a citizen-centric socio cognitive model for participation. The model incorporates a multidisciplinary theoretical framework and aims to support the research of societal participation and eParticipation, and activity planning and impact assessment for public and third sector actors. The model enables investigating participation through external, activity, and internal layers and promotes transdisciplinary research by simultaneously recognising relativistic, pragmatic, and empiric positionings in relation to societal participation.

PV Youths' digital participation in the early phases of COVID-19 lockdown. The fifth publication contributes empirically to the discussions of equal access to societal participation, digital divides, and how the digital solutions may support young people in situations such as the lockdowns due to COVID-19. The

publication addresses how young people experience the digital services during COVID-19, and how their backgrounds may be affiliated with the gained benefits from digital solutions. The results suggest that everyday activities of the young people, such as work, school, societal participation, and social interactions are supported by digitality, and that inadequate ICT skills and various technical problems have formed obstacles for coping during the lockdowns. Furthermore, the publication suggests that there are differences between different kinds of young people in how digitality supports their coping, and that these differences are strongly related to the young people's ICT skills. Noteworthy theoretical contribution of the fifth publication relates to incorporating the citizen-centric socio-cognitive model for participation that was introduced in the fourth publication.

4.2 RQ1 - What are the youths' conceptions regarding digital societal participation?

Young people view various digital activities as societal participation. Young people affiliate digital societal participation with the utilisation of different social media services, such as Facebook, Twitter, and WhatsApp. These channels are used to for instance consume news contents, petition signing, and answering digital surveys. Moreover, **actively participating in discussions** through real time chat services e.g., Slack or Discord and on forums such as Reddit are seen as ways of digital societal participation. In addition to contributing to discussions and consuming contents created by others, **creating content** is seen as a relevant activity in digital societal participation. More specifically sharing references to information sources in social media discussions, discussing political topics during live video streams, or creating political videos in YouTube were mentioned as specific activities under digital societal participation. (Publication I.) Digitality and societal participation in the context of COVID-19 related lockdowns were linked to using various technologies that enabled individuals to sustain and continue **studying, working, and being connected to friends and family** despite restrictions. **News, governmental information consumption, and digital tools in attending meetings** were especially emphasised aspects in digital societal participation during the early COVID-19 related lockdowns. (PV.)

Digitality in societal participation is furthermore linked to lowered threshold to participate due to asynchronicity, location independency, and possibilities to secure and protect one's identity. Other factors that contribute to digitality lowering the

thresholds of societal participation include effortlessness and speed of information sharing and acquisition. Also, multimodality and support for various media types promoting freedom of expression are regarded as threshold lowering factors of digitality. However, the conceptualisation of digital participation is affiliated with negative factors too. (PIII.) Threats and downsides in characterising digital participation include lack of commitment of the users, aggressions and provocation enabled by anonymity, misinformation, and technology related issues such as poor connections or inadequate technological skills. Technical issues, such as network congestion and inadequate ICT skills were emphasised during the early COVID-19 related lockdowns in regard to digital societal participation. (PV.)

The factors that would entice young people to take a more active role in societal discussions include experienced topic relevance and having a real effect. Experienced topic relevance is more specifically approached from identification and interest point of view. Either the topics need to be somewhat relevant to an individual's life for interest to emerge, or there needs to be a pre-existing interest towards the topic. Examples experienced relevance included topics such as student life, sexual minorities rights, environmental issues, and morally meaningful choises (On for instance consuming). Having a real effect as an enticing factor in participation refers to whether or not the participation activity and desired outcome actually ends up in the decisions and how the effect is communicated back to those who participated. (PII.) A summary of the youths' conceptions regarding digital societal participation is described in Figure 13.

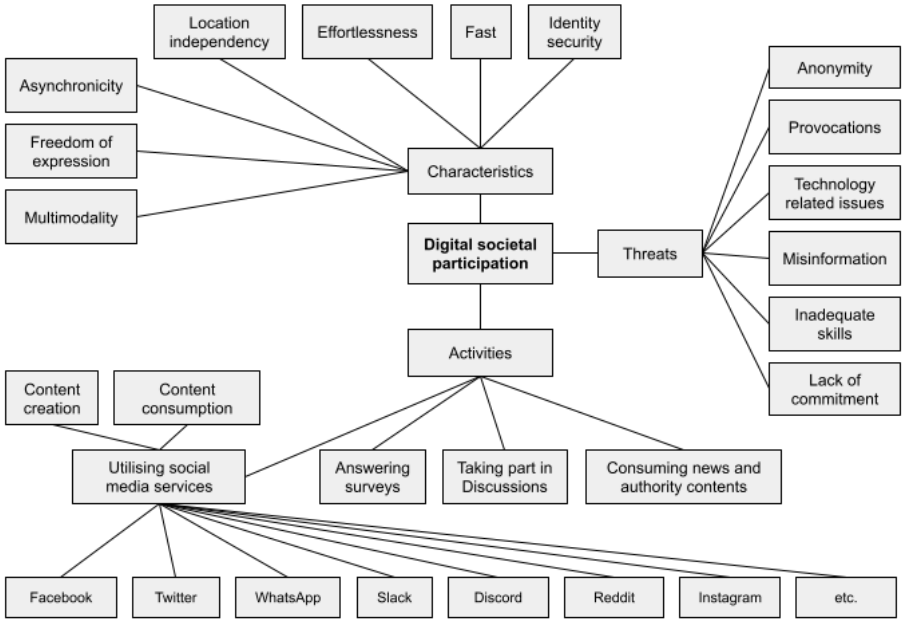

Figure 13. A summary of the youths' conceptions regarding digital societal participation

4.3 RQ2 - What are youths' user needs regarding digital societal participation?

Young people's user needs in regard to digital societal participation and eParticipation services include aspects, features and solutions that consider factors of experienced **trust and safety, motivation to participate, integration to governmental processes and the efficiency and effectiveness of use.** (PII.)

The experienced trust and safety relate to fears of provocations, targeting and trolling, and manifests as needs for moderation, rules, and solutions that enable protecting and securing one's identity, such as anonymity. Moreover, trust is affiliated with familiarity with the service and could be addressed by for instance including eParticipation services in study plans at various educational stages and thus advancing familiarity with the services. To summarise, the eParticipation service needs to establish a safe space. Needs under the category of motivation to participate include more specifically personally interesting topics, knowledge of the topic, and rewards such as gift cards or money. Also, advancing a societal goal was considered

as a rewarding element. Another user need category relates to how the eParticipation service is integrated to the governmental processes. It consists of more specific needs that address whether the participation activity has a real impact, how the effect is represented to the participants, and how the governing officials interact or are available within the service. These two are considered reciprocal: Constant and frequent interactions with officials may induce experiences of having one's voice heard. The category of needs related to efficient and effective use refers to characteristics of an eParticipation service. The services need to be easy to use and the implemented information representation needs to be clear. At a more tangible level, the category of needs related to efficient and effective use consists of features such as search, filtering, tags, service usage statistics and analytics, and customisable notifications. Also, a feature that enables users to express their willingness to participate in a new council was identified as a need. Finally, a materials section that enables uploading support materials and documents, and linking to third party resources was identified as a concrete feature level need. (PII.) User needs of young people for digital societal participation are summarised in Figure 14.

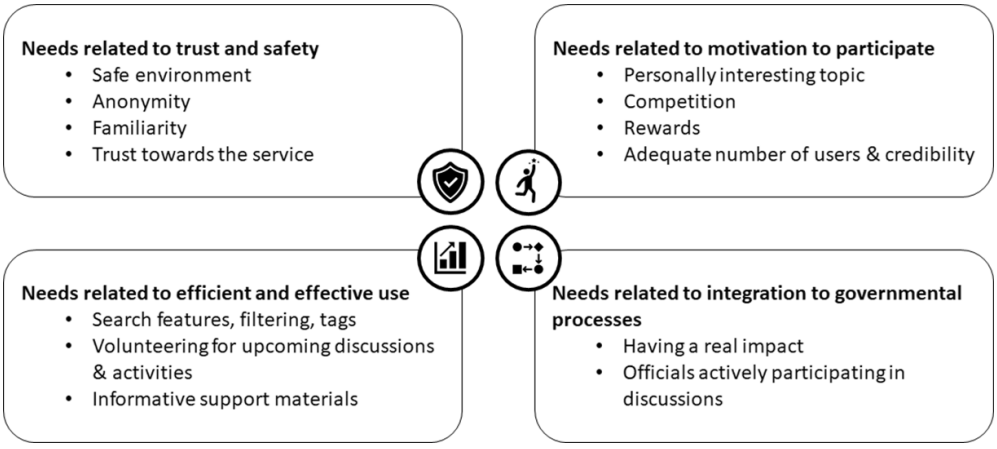

Figure 14. Young people's user needs for digital societal participation

4.4 RQ3 - How can digital solutions support societal participation of youths?

Digital solutions such as eParticipation services may **enhance the societal participation self-efficacy** of young people. Moreover, use of eParticipation services may contribute to **lowering the threshold to societal participation** through various activities. (PIII.) Digitality supports societal participation by enabling consumption of news, official contents, and other information, providing tools for participating and facilitating meetings and workshops, and taking part in other various youth activities such as youth councils. In addition to this, digitality supports various regular non-freetime related activities such as studying, working, and rehabilitative activities. Digitality also supports connectedness and sustaining social interactions with friends and family. (PV.)

Characteristics of digital solutions that support societal participation include ease of use and clarity. Moreover, digital solutions can support societal participation by offering enhanced societal empowerment and activities, safe spaces for participation, well implemented relevant features, and acting as a potential complementary service in the context of all the service alternatives that enable societal participation. Also, by providing access to discuss the topics that are individually experienced as interesting, and enabling reaching the decision-makers, the digital solutions support societal participation. Finally, digital solutions are also experienced to support societal participation by enabling making a difference and having a real effect on the decisions. (PIII & PV.) These factors are summarised in Figure 15.

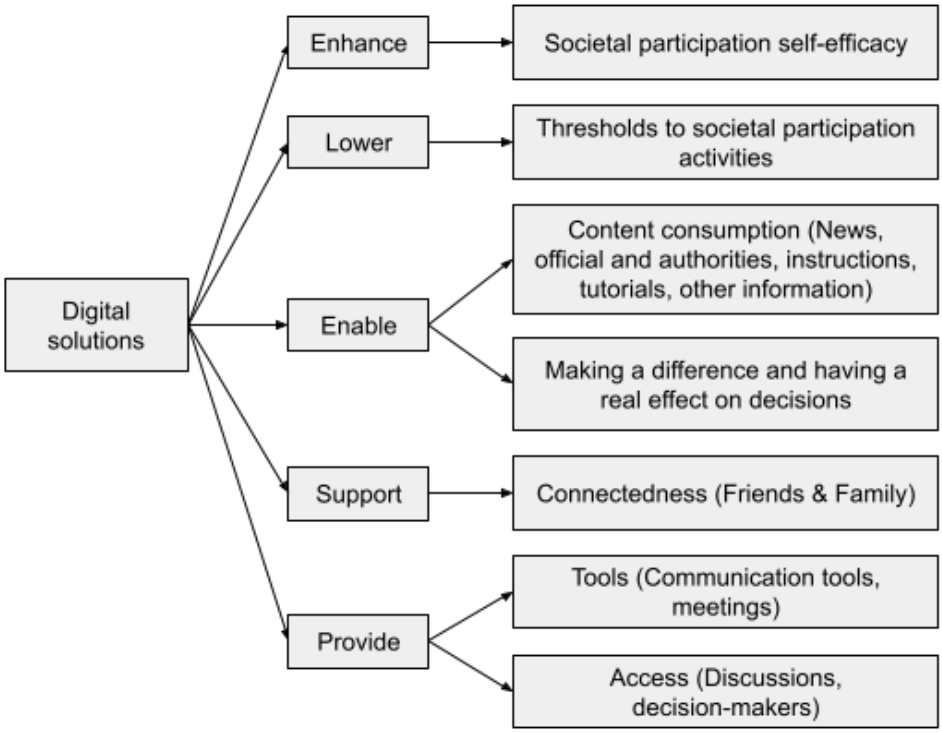

Figure 15. Summary of factors that contribute to how digital solutions support societal participation at subjective experience level.

5 DISCUSSION

In this section, the thesis-level research questions and their answers are set into a dialogue with the related previous studies and the relevant theoretical frameworks. The discussion is further divided into individual sections for each research question. Additionally, there is a fourth section that provides a discussion for the Citizen-centric socio-cognitive model for societal participation that is introduced in publication PIV. Moreover, the limitations of this thesis are discussed through integrity, validity, and reliability, and future research directions are elaborated at the end of this section.

5.1 Revisiting the research questions

5.1.1 RQ1: What are the youths' conceptions regarding digital societal participation?

The results reflect similar conceptualisations of digital societal participation than what have been proposed for societal participation, however with online and mediated contextualisations. For instance, it is possible to identify aspects of the definition of participation given by the Finnish National Institute for Health and Welfare, such as *"engaging in processes that have effects in groups, services, living environments, and in the society"* and *"to engage in creating meaningfulness and experience social relationships"* (PI, p. 1; Isola et al., 2017). Moreover, the results reflect digital societal participation to refer to a larger sphere of activities than those that are regarded as political in a narrow sense, which is analogous with elaborations by for instance Hästbacka et al., (2016), Adler & Goggin (2005), and Stolle & Hooghe (2011). This observation implies a possible conflict with the definitions that are narrower and do not recognise the latent forms of participation as outlined by Ekman and Amnå (2012).

At the activity level, the results reflect different kinds of emphasis on what is regarded as digital societal participation in comparison to the propositions on societal participation - as one might expect. The results suggest a characterisation for

digital societal participation with much more weight on mediatedness and service-centricity in comparison to how societal participation is characterised. The differences regarding the social and interactional aspects of participation may be interpreted to address belonging to groups, parties, and organisations. The results imply an understanding of digital societal participation related social and interactional activities more fluid, dynamic, and transformative when juxtaposed with the characterisations of societal and political participation. As discussed in the related works section, previously societal participation may have been thought to include activities such as belonging or participating in political party or NGO activities (E.g., Adler & Goggin, 2005; Harris et al., 2010; Deth, 2001). The results suggest that the social aspects related to participation may be characterised through belonging and contributing to various networks and platforms simultaneously, and that the activities that are regarded as societal participation, also nurture other areas of wellbeing through subjectively experienced recognition and feeling of belonging and empowerment. Also, the results point out that content creation and consumption were seen as essential activities, which may reflect a difference in how digital societal participation takes multimodality significantly further than what the previously proposed characteristics of societal participation suggest.

Various forms of interacting, information consumption, actively participating in discussions, and content creation are regarded as digital participation by the participants. This can be considered to be analogous with how Alfredsson Ågren et al. (2019) operationalised digital participation into finding new information online, communicating with friends and family, and consuming online contents, as well as how Mercea (2012) outlined digital prefigurative participation to include activities that support societal activities that also may manifest in offline forms, such as protest or demonstration preparations. Meriläinen et al. (2018) affiliated digital participation with personal and political identity development. This can be linked to the notion of how young people characterise and value the freedom of expression, multimodality and identity security related to digital participation. Perhaps through freedom of expression, anonymity, and other identity security mechanisms the threshold to try out different kinds of identities is lower.

As discussed in 2.4.2. Digital participation and eParticipation, Polat (2005) characterises the role of the Internet in online political participation through three aspects: Enabling factor for providing information, functioning as a communication medium, and functioning as a public sphere for discussions. Indeed, these three aspects can be identified within the young people's characterisation for digital participation. Activities such as consuming news and other contents can be easily

identified with the Internet being an enabling factor for providing information. Moreover, answering surveys, utilising social media services, and characteristics such as asynchronicity and location independency can be affiliated with the role of the Internet functioning as a communication medium. Finally, the aspect of the Internet functioning as a public sphere for discussions outlined by Polat (2005) is identifiable in the activities such as taking part in discussions, content creation, and characteristics such as freedom of expression and multimodality.

5.1.2 RQ2: What are youths' user needs regarding digital societal participation?

Section 2.3.2. User experience, elaborates how McNamara & Kirakowski (2006) outline engagement, presence, effectivity, and usefulness as key concepts in UX. The young people's user needs in eParticipation that relate to the motivation to participate can be seen to be affiliated especially with the engagement aspect of UX. How a young person relates to and identifies with the topic that is discussed in the eParticipation service seems to be one of the crucial factors in determining the level of engagement to the service and the societal discussion. The aspect of presence in UX can be linked to the young people's user needs for officials actively participating in discussions and facilitating feedback, process advancements, and outcomes. The UX domains of effectivity and usefulness are identifiable in the needs related to efficient and effective use, which include search features, filtering, tags, volunteering, and informative support materials. Moreover, the effectivity domain is emphasised in the need for having a real impact and how the eParticipation is experienced to be integrated with the societal and decision-making processes.

The user needs elucidated in the second study (PII) can be discussed in the light of dichotomisation of UX into ergonomic (EQ) and hedonic qualities (HQ) (Section 2.3.2. User experience see Hassenzahl, 2001; Laugwitz et al., 2008). Especially the user needs that regard efficiency and effective use of eParticipation services can be considered as ergonomic qualities as they are highly task and goal oriented and are seen as key features in enabling efficient use of the service. The needs related to trust and safety, and the needs related to motivation to participate emphasise the hedonic qualities of UX. For instance, needs for a safe environment, familiarity, and trust towards the service reflect outwards directed HQ's. However, the needs that regard integration to governmental processes can be seen to have characteristics of both, EQ and HQ. The need for having a real impact may be seen as an ergonomic quality

as there is a goal to have an impact and a certain level of effectiveness needs to be obtained for this goal to be reached. However, the hedonic quality of the user needs for having a real impact is identifiable as it is considered to be highly rewarding and a key motivator in participating in the first place. Similarly, the need for officials participating in discussions can be seen twofold in regard to its EQ / HQ characterisation. How the officials participate in discussions with citizens is a question of administrational division of labour and a design and feature question in a specific eParticipation service and can thus be regarded as an ergonomic quality. However, for the young people using an eParticipation service, officials actively participating in discussions and contributing to feedback loops, can lead to producing experiences of having one's voice heard, making a difference, and being recognised, and thus thought of as a hedonic quality.

The results can be discussed from the perspectives of front-end citizen-centricity, back-office citizen-centricity, and the intermediate approach proposed by Luna-Reyes et al. (2011). The needs related to efficient and effective use, trust and safety, and motivation to participate elucidated in PII consider feature-level and subjective aspects and thus can easily be identified as incorporating a front-end citizen-centered approach if implemented. However, the needs related to integration to governmental processes respond well to questions that are considered a back-office citizen-centered approach. Additionally, specific user needs such as personally interesting topics, informative support materials, and having a real impact can be thought of as incorporating the intermediate approach as they may provide elaboration on questions such as *"...who are the users, what are their goals, and how can they achieve these goals?"* (Luna-Reyes et al., 2011, p. 215). This intermediate approach may be seen to be affiliated with how Toots (2019) asserted that eParticipation services create both possibilities and failures for societal participation, and further emphasises the existing eParticipation services complexity and inability to meet the various user groups expectations and goals in participation.

At the level of the specific needs, similar results can be identified in previous studies. For instance, the fear of conflicts and a user need for safety in eParticipation discussed in PII may be interpreted to be analogous with the study by Akiva et al. (2017). They suggest that the young people that have participated in societal activities experienced the safety of the participation space as a key factor in determining the likelihood to participate. They further elaborated that the participation space should affirm the young people's social identities and be protective. Also, the specific need of personally relevant and interesting topics is analogous to how Kahne et al. (2013) summarised interest-driven participation to be a crucial predictor for the likelihood

to participate and how the experienced relevance of the topic increases the probability of participation.

Moreover, Newman et al. (2004) discuss the interactions between citizens and governing actors. They highlight issues such as infrequent and irregular communications from behalf of the officials and inability to communicate outcomes of participation or give feedback. Checkoway (2011) included participation having an actual effect in the very definition of societal participation. Similarly, the results of this thesis suggest that eParticipation needs to be integrated to the societal, governing, and decision-making processes to enable impact, and that the eParticipation service needs to incorporate interaction mechanics that enable communicating the outcomes and effects to the citizens. In other words, the governing actors or officials are required to communicate the significance and results of the participation activities to the participants as concrete outcomes and effects through examples or specific sections in decisions. Also, the frequency and delay of communicating the results need to be considered in addition to specificity to avoid the experience of lack of transparency and being deflected as mentioned by Newman et al. (2004). Properly implemented interaction and feedback in eParticipation respond to the needs for recognition, interaction, and feedback, and mitigates the fear of being ignored.

5.1.3 RQ3: How can digital solutions support societal participation of youths?

In various definitions and characterisations of eParticipation it is commonly assumed or implied as an inherent quality that digitality itself or the way that the participation is digitally arranged causes enhanced participation (Panopoulou et al., 2014) and enables accessibility and availability (Saebo et al., 2010). The results of this thesis reflect similar aspects to the relationship of digital solutions and societal participation as proposed by Panopoulou et al. (2014) as aspects of enhancing societal participation and citizen engagement were identified. Polat (2005) proposes a three-way elaboration of the relationships of societal participation and the Internet as discussed in 2.4.2. Digital participation and eParticipation: Enabling information provision, functioning as a communication medium, and functioning as a public sphere for discussion. The aspect of enabling information provision is identifiable in the results as digital solutions enable content consumption such as news and official's information. Functioning as a communication medium is present in how digital

solutions support connectedness and provide tools for communication. Functioning as a public sphere for discussion is visible in how digital solutions provide tools and access to societal discussions and decision-makers and enable making a difference. Furthermore, Kahne et al. (2013) suggest that digital participation may be regarded as a gateway to offline participation activities and may contribute to lowering the thresholds to various societal participation related activities such as volunteering, community problem-solving, and protesting. The results presented in this thesis reflect similar findings as use of an eParticipation service seems to contribute to lowering the thresholds to various forms of societal participation.

The results regarding RQ3 can be discussed in the light of Hassenzahls (2001; see also Laugwitz et al., 2008) EQ and HQ division of UX. The EQ domain of UX can be affiliated with how the digital solutions enable content consumption and provide tools for communication and access to discussions as these represent rather goal and task-oriented activities. However, the more novel contributions of this thesis regarding how the digital solutions may enhance societal participation self-efficacy and lower thresholds to societal participation activities, reflect the HQ aspect of UX. More specifically, these phenomena may be regarded as inward directed factors in HQ as they can be thought to be affiliated with personal development and growth. Perhaps implementing eParticipation services that enable enhancement of societal participation self-efficacy could be seen as a seductive behaviour influencing mechanic to increase the likelihood to online and offline participation (Bevan, 2015; Tromp et al., 2011).

Panopoulou et al. (2018) discuss concepts of integration to governmental processes as a crucial factor to how eParticipation services are accepted. By integration to governmental processes, they refer to how an eParticipation service enables making real effects on decisions, and how the participation activities of citizens are transferred into practices. These may be seen similar to how the results of this thesis reflect digital solutions enabling making difference and providing access to interactions with decision-makers.

Self-efficacy in societal participation contexts is thought to be a predictor for likelihoods, modes, and outcomes for societal participation activities (Bandura, 2006; Latikka et al., 2019) and to be highly related to democratic stability (Solhaug, 2016) as discussed in section 2.4.4. Societal participation self-efficacy. The results presented in study 3 and PIII suggest that the young people who are less experienced in societal participation, may benefit from using eParticipation services in regard to their societal participation self-efficacy and that using eParticipation services may contribute to lowering the thresholds of various societal participation activities. The

design of the eParticipation service that was used in the intervention (Virtual Council or Digiraati in Finnish) was successful in regard to the ease of use, clarity, interaction mechanics that enabled experiences of empowerment, impression of having an effect and reaching the decision-makers, and safe environment and thus contributed to lowering the thresholds for participation. Analogous to this, Frieß & Porten Cheé (2018) suggest that perceived participatory effects and experienced tolerance in eParticipation are affiliated with how intensively eParticipation services are used. Perceived participatory effects can be linked to the impression of having an effect and reaching the decision-makers, and experienced tolerance can be identified with the aspect of safe environment discussed in PIII.

5.2 Towards a citizen-centric socio-cognitive model for societal participation

Publication PIV introduces a preliminary model entitled Citizen-centric socio-cognitive model for societal participation (Henceforth referred to as CCSCM). Models can be regarded as frameworks that define, describe, and elaborate on the relationships between various constructs, and enable theory synthesis through concept integration and incorporating different theoretical approaches (Jaakkola, 2020). CCSCM is in its initial stage and has not been evaluated or validated.

As discussed in 2.4.3. Models and frameworks for participation and eParticipation, various models for participation and eParticipation do exist, however they can be considered as process and system oriented, neglect recognition of citizens and participation in a holistic manner, and do not enable operating on participation explicitly through internal, external, and activity levels. Moreover, they do not consider participation from a UX point of view. CCSCM aims to supplement the research fields of societal participation and eParticipation, and to enable the design, development and evaluation of eParticipation services to progress towards a more holistic and transdisciplinary paradigm. The model is based on the research underlying RQ3 of this thesis and the publications PIII & PV have contributed to the definition of the layers presented in CCSCM.

CCSCM proposes an integrative framework in which eParticipation, and societal participation are recognised as complex sets of interconnected processes that regard resources such as cognition and sociality. It promotes operating on participation through a transdisciplinary lense where different epistemological and disciplinary (See eg., Boon & Baalen, 2019) perspectives are recognised. The main aims of

CCSCM are 1. To provide a multidisciplinary theoretical framework to support research of (e)Participation, and 2. To Provide a tool to support activity planning and impact assessment for the public and 3rd sector actors. Altogether it aims to take a step towards a unified integrative framework for broader conceptualisation of eParticipation and societal participation.

CCSCM sets an individual in the centre and enables operating on the external layer, activity layer, and internal layer as summarised in Figure 16. The external layer connects to how digital solutions provide tools and access and supports connectedness with external entities. Similarity can be seen between the external layer in CCSCM, and the entities and phenomena defined by Law & Sun (2012) in their application of AT in UX contexts. Activity layer connects to how digital solutions enable content consumption and production, various interactions, and taking part in societal discussions. Internal layer is connected to how using digital solutions may affect internal constructs, i.e., for instance lower the thresholds to societal participation activities and enhance societal participation self-efficacy. Analogies between the internal layer of CCSCM and the HQ domain in UX defined by Hassenzahl (2001) can be identified as both imply individual inward directed factors.

CCSCM suggests that entities that are external in respect to an individual citizen reside on the external layer. For example, artefacts, processes, and other individuals, such as eParticipation services, governing processes, communities, and decision-makers can be placed on the external layer in relation to a citizen. The activity layer in CCSCM is a sphere in which all the activities conducted by an individual reside in. These activities are further divided into manifesting and non-manifesting activities. Manifesting activities considers all the activities that manifest outside the individual in any form and can be sensed, consumed, viewed, appraised, or touched by others. For instance, NGO activities, voting, sharing or discussing societal matters online, taking part in demonstrations, or adjusting consumer behaviours can be regarded as manifesting participation in the activity layer. Moreover, the non-manifesting activities on the activity layer includes activities that cannot be experienced outside the individual but requires an interaction with an external component. An example of non-manifesting activity is information search and consumption. Finally, the internal layer consists of processes and functionalities that can be regarded as internal in regard to an individual. The internal layer includes subjective experiences such as identity, experience of belonging, and societal-participation self-efficacy. Furthermore, processes such as information appraisal, consolidation, and processing, internal deliberations, and opinion formation can be attributed to the

internal layer. Dividing participation into the external layer, activity layer, and internal layer enables exploring the relationships between entities and phenomena in each layer.

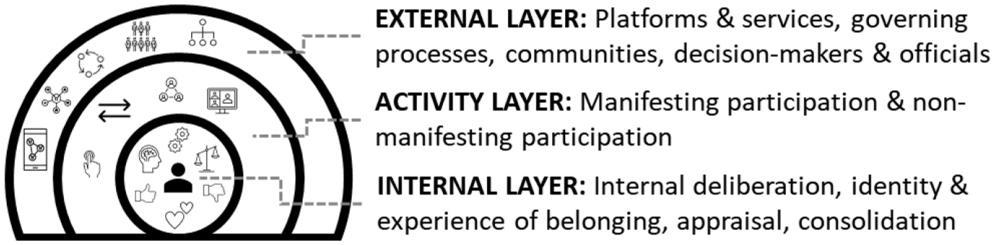

Figure 16. Citizen-centric socio-cognitive model for societal participation and external, activity, and internal layers.

In contrast with previous models and frameworks for eParticipation, CCSCM sets an individual citizen in the centre instead of an eParticipation service as is proposed by for instance Kalampokis et al. (2008). Moreover, CCSCM provides a broader lens for exploring eParticipation than the acceptance model proposed by Panopoulou et al. (2012). eParticipation service acceptance can be regarded as a relationship inside CCSCM between an eParticipation service residing on the external layer and an individual's internal UX attributes regarding the service.

CCSCM enables operating simultaneously on societal participation and eParticipation through empiristic, pragmatic, and relativistic epistemic approaches as summarised in Figure 17. This promotes considering the citizens subjective experiences regarding the service, participation activities, and having one's voice heard, but also how the service succeeded to support in solving a problem, and objectively establishable indicators reflecting for instance use statistics and QoS in eParticipation service evaluation. As CCSCM recognises and considers the internal processes and states that can be regarded as subjective and attached to the experience of an individual, it reflects a relativistic epistemological view. Pragmatist view is visible in how CCSCM recognises the practical value of eParticipation services, other artefacts, and activities. Finally, CCSCM addresses empiricist views through recognition of objectively identifiable, observable and measurable indicators for eParticipation services and other societal participation related activities. As a loose generalisation, it may be thought that the relativistic epistemic approaches are more emphasised when we move from the external layer towards the internal layer on the model. In turn, the pragmatic and empiristic views may be more weighted as the perspective moves from the internal layer towards the external layer (Figure 17).

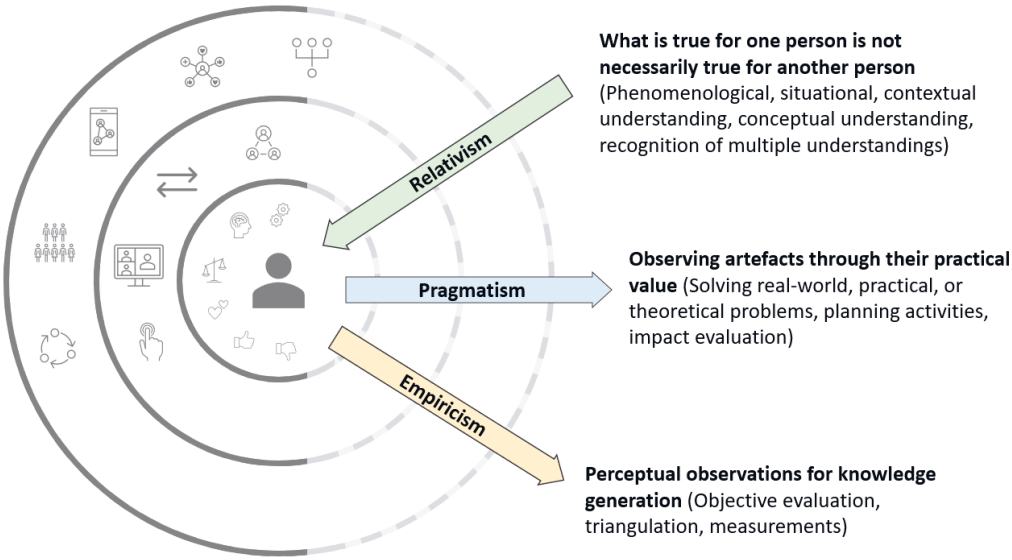

Figure 17. Transdisciplinary disposition of the CCSCM: Layers emphasise different epistemic approaches

Figure 18 describes a simplification of the voting process of an individual - more specifically, a rational voter, who is able to gather and appraise information and has time and capability to do so, as described by Evans (2004). For this example, the pre-existing motivators to vote are excluded as this example aims to explain how CCSCM can be applied through a simplification. The act of voting can be theoretically explored through CCSCM in the following simplified manner: An individual recognises willingness to vote at the internal layer and thus executes information search at the activity layer using an election information service which resides at the external layer. The information represented in the election information service at the external layer is then consumed at the activity layer and fed to the internal layer for information appraisal and consolidation. The consolidated information may provide for activities such as informal discussions, or liking and sharing in online settings, which are conducted in interaction with candidates or communities situated at the external layer. Furthermore, the consolidated information contributes to making the actual decision which provides for executing the voting at the activity layer through the voting service or process which again resides at the external layer.

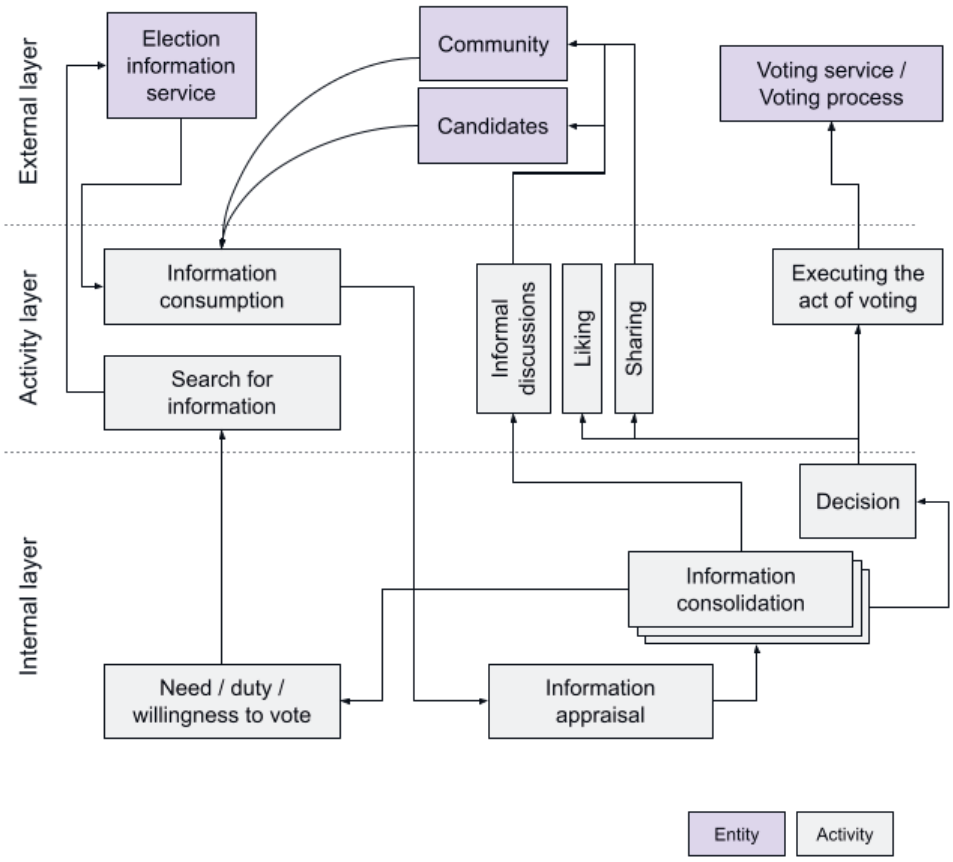

Figure 18. Example of CCSCM application in the simplified process of voting

The approach presented in CCSCM enables exploring the relationships between factors that reside at the different layers. As discussed in 2.4.4. Societal participation self-efficacy, a high level of societal participation self-efficacy may be seen as a predictor for participation likelihood, modes, and outcomes, and to reflect democratic stability (European Social Survey, 2016; Solhaug, 2016). The results presented in PIII and discussed in section 5.1.3. RQ3: How can digital solutions support societal participation of youths? suggest that societal participation self-efficacy may be enhanced, and societal participation activities thresholds may be lowered through digital solutions. Thus, for instance, CCSCM can be applied to explore the relationship of an eParticipation service at the external layer, its usage at the activity layer, and constructs such as societal participation self-efficacy and thresholds to participation activities at the internal layer as summarised in Figure 19. This may enhance the design and evaluation of eParticipation services by promoting a more holistic approach.

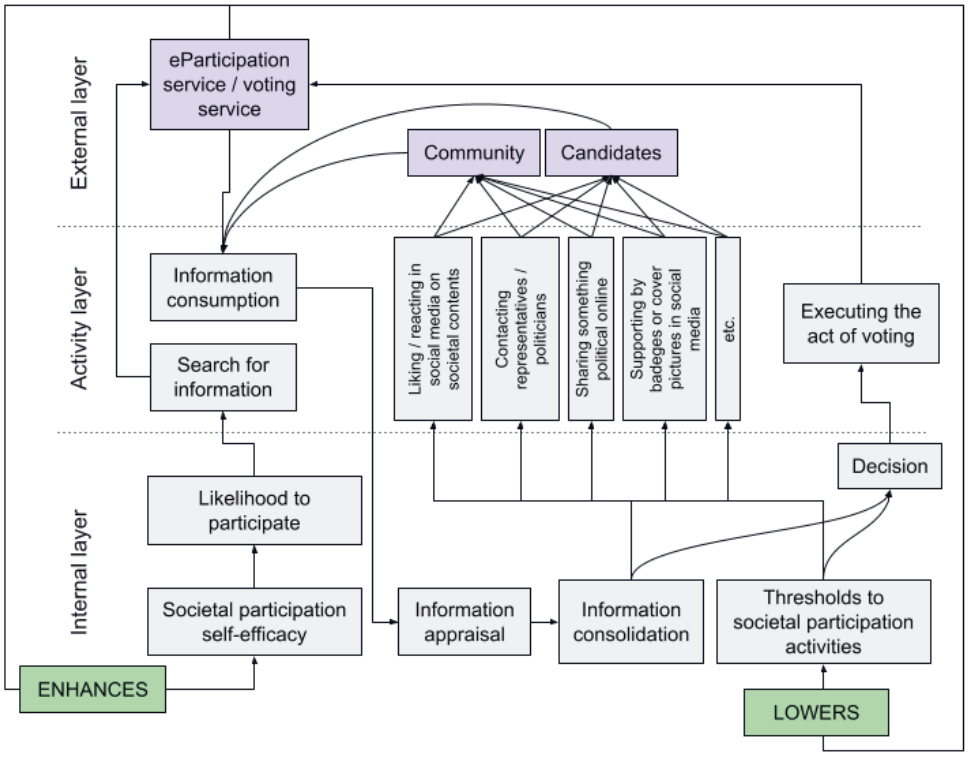

Figure 19. Example of CCSCM displaying the relationships between eParticipation service and enhanced societal participation self-efficacy and lowered thresholds for societal participation activities in the context of voting

5.3 Limitations

5.3.1 Integrity

As Resnik & Elliot (2019) refer to Dictionary.com, in scientific contexts, integrity is thought to refer to heeding to moral and ethical principles and honesty, and acts as an opposite to malpractice, such as data fabrication and falsification (See also Shamoo & Resnik, 2015). According to Resnik & Elliot (2019) scientific integrity can be approached from two different dimensions: Process integrity and outcome integrity. Process integrity is related to how the norms, assumptions, and requirements for empirically adequate results are adhered to. Outcome integrity of

research refers to empirical adequacy of the conclusions, theories, or suggestions that are based on the results.

In this thesis, a high level of process integrity has been pursued by adhering to the ethical recommendations outlined by Finnish Advisory Board on Research Integrity (TENK) as elaborated in section 3.4. Research ethics. Moreover, the process integrity is identifiable in the thorough planning of the individual studies and their research settings, precise data management, and rigorous and ambitious analysis pipelines. The transparency and detail in the descriptions of the data acquisition and applied analysis methods promotes and provides for external integrity evaluation. In studies S3 and S4 and their corollary publications PIII and PV the small sampling size may be thought to reduce the process integrity of the studies. However, the affiliated inferential statistical analyses are reported transparently and in detail, and the conclusions are expressed with caution. Additionally, the studies are triangulated with qualitative methodological components.

Outcome integrity in this thesis has been considered through cautious deduction and representation of results and conclusions. Outcome integrity also is promoted through the in-depth reflections of the individual study results in relation to the previous related studies in discussions. Moreover, the high level of triangulation in the individual studies, and the conscious choice of transdisciplinary approach through three epistemological lenses incorporating empiristic, pragmatic, and relativistic viewpoints, enhance the overall integrity of the research constituting this thesis.

5.3.2 Validity and reliability

One approach to evaluating the validity of research is through the appraisal of the performance of an applied measuring instrument in regard to what it was designed and meant to measure, i.e., validity reflects the relationship of a measuring instrument and the phenomena or construct that is the object of the research (Carmines et al., 1979; Litwin, 1995).

More specifically, according to Carmines et al. (1979) validity can be divided into criterion-related, content-related, and construct-related aspects. Criterion-related validity reflects how well the conducted test or measurement corresponds to the intended criterion and thus can be thought to have *"...the closest relationship to what is meant by the everyday usage of the term* [Validity]*."* (Ibid., Section on validity). In other words, criterion-validity may be seen as a conceptualization on how well the applied

instruments represent the phenomena that is under inquiry. Content validity considers how thoroughly and comprehensively a measurement reflects a construct or phenomena that it is intended to measure. Content validity can be used to determine whether a test considers a domain it is aimed to measure in its full extent and whether it considers all the components and nuances within the domain sufficiently. Construct validity can be thought to reflect the relationship between the theorisation and empirical findings within a study. Construct validity consists of elaborating the theoretical relationship between constructs, measuring a relationship between constructs, and interpretation of the emerged empirical evidence. According to DeVon et al. (2007; See also Trochim 2001) Face validity can be defined as a subjective appraisal of an instrument and can be evaluated by the researchers conducting a study or in for instance a pilot study by participants that represent similar sampling as the intended study.

In this thesis, high criterion-related validity and content validity have been pursued by rigorous literature and previous studies reviews in each study, and thorough and in-depth investigations in previously applied measurement instruments i.e., questionnaires. This has presumably enhanced the criterion-related validity, as the applied instruments have been developed to denote the concepts and phenomena intended. Moreover, the face and content validity of the applied instruments has been enhanced by including multidisciplinary work groups in compiling the questionnaires and interviews. Also, applying pilot studies in which the questionnaires have been appraised by pilot participants further enhance the criterion-related and content validity of the used questionnaires as well as the face validity. Pilot studied elucidated possible flaws of the applied instruments and enabled further specifications and modifications thus enhancing criterion-related validity. Construct validity has been supported through implementing a transdisciplinary approach to the research premises and by applying thorough and multidisciplinary consideration in the discussions, which has enabled elaboration on various theoretical explanations for construct relationships. More specifically, for instance the authors of publications PII, PIII, PIV, and PV consist of scholars from various scientific fields which contributed to broadening the theoretical elaborations and thus strengthened the construct validity.

Reliability in research reflects how well the results can be reproduced with similar measurement instruments, settings, and sampling, and how precise estimation of an effect the instruments enable to describe (Litwin, 1995). More specifically, reliability can be assessed through retesting, alternative-form method, split-halves method, and estimating the internal consistency (Carmines et al., 1979; Litwin, 1995).

The empirical studies implemented in the research constituting this thesis incorporated such study designs and settings that do not allow for formal test-retest, alternative-form, or split-halves method reliability testing. However, in the studies S1 and S4, and their corollary publications PI and PV, the internal consistency estimation has been applied to evaluate the reliability. More specifically, the sum variables which are formed from Likert-scale questionnaire answers that reflect the measured constructs are evaluated in regard to their Cronbach's alpha value. Cronbach's alpha is used as a measure that reflects internal consistency of a latent construct represented by a sum variable and can be applied as an indicator for internal reliability (Cronbach, 1951; Bland & Altman, 1997). The alpha values exhibited by the constructs in studies S1 and S4 are acceptable, which reflect good internal reliability. Also, the Likert-scale questionnaires have been implemented at the scale of 1-7 which can be considered optimal in regard to resolution, accuracy, and less volatile than e.g., scales of 1-4, 1-5, or 1-9 (Russell & Bobko, 1992; Diefenbach et al., 1993; Finstad, 2010), which further enhances the reliability of individual instruments. All the applied questionnaires are transparently reported in the publications and thus available for evaluation. The intra-study measurement homogeneity was assured by exact compliance of the defined procedures in data acquisition. This mitigates data corruption in acquisition phase and further contributes to strengthening both, reliability and validity of the studies.

CCSCM forms the main issue of this thesis in regard to reliability and validity as it is only in its preliminary phase and under development and should be considered as work in progress.

5.4 Future work

As outlined in section 5.3., the studies reported in this thesis incorporate research settings in which a rather short time period has been taken into consideration. Interesting areas in future research could include how the conceptualisation of digital societal participation, user needs for eParticipation, and the ways that digital solutions support societal participation fluctuate over long time periods among same participants. More specifically, the research setting implemented in study 3 (PIII) could be applied with a longer time frame and a larger quantity of interventions to provide a more detailed investigation into the dynamic nature of societal participation related self-efficacy and its relationship to eParticipation.

In a methodological point of view, another interesting area in future research is studying the participatory HCD methods in eParticipation service design contexts. Research might explore the preferences that the young people may have in regard to the participatory design methods i.e., how the young people would like to participate in designing the eParticipation services. More specific questions could include: What kind of co-design methods would enable producing the most enticing, inclusive, and impactful eParticipation services?

Finally, to take the research toward a more societal and administrative direction, the ways in which the eParticipation services are integrated to governmental processes could be explored further. What kind of user needs and requirements the governing actors and officials have for eParticipation services? How the participation activities and inputs of the young people could be transferred from the eParticipation services into the decisions and practices? How should the feedback loop between the officials and young people be implemented, i.e., how the transferred inputs implemented into decisions are communicated back to the citizens?

Citizen-centric socio-cognitive model for societal participation is in its initial stage and should be developed further. The future research could include multiple studies which would enable iterative development and evaluation of the model. CCSCM could be studied as a theoretical framework through exploration of causal relationships between the entities and layers presented in the model. Moreover, CCSCM could be studied through case studies as implementations in the public and 3rd sector as a tool for planning and evaluating activities. Furthermore, in the future CCSCM should be evaluated and validated in ways which involve various stakeholders, including young people, facilitators from NGO's, officials, decision-makers, and scholars from various fields.

6 CONCLUSIONS

This thesis attaches to the discussion on young people's societal and digital participation, and how the possibilities for participation of young people could be broadened. The results of this doctoral thesis suggest novel understanding and knowledge regarding how young people conceptualise digital societal participation, what are the young people's user needs for digital societal participation, and how the digital solutions support societal participation of young people. Overall, 467 young people took part in the workshops, interviews, or survey studies and provided data to the four empirical studies.

The contributions of this thesis provide insight to the fields of human-technology interaction (HTI), human-centered design (HCD), and touches also the broad concept of user experience (UX). Moreover, this thesis contributes to research on societal participation and eParticipation. Theoretically this thesis contributes to the youth-centric conceptualisation of digital societal participation and suggests a model entitled Citizen-centric socio-cognitive model for participation (CCSCM) which can be incorporated as a theoretical framework in societal participation and eParticipation studies. The practical contribution of this thesis consists of an eParticipation service prototype (Virtual Council / Digiraati) and the identified user needs of young people for digital societal participation. Also, CCSCM may be considered as a practical contribution as it can be applied by public and 3rd sector actors as a tool in activity and service planning and evaluation.

The broadened understanding on how young people conceptualise digital societal participation provides novel viewpoints for the discourses regarding societal decision making and governing. Considering how young people conceptualise digital societal participation may support the design and development of the services and processes that include citizens in the decision making, and thus enable more socially sustainable development of governance. Moreover, considering the specific user needs that young people have on digital societal participation and eParticipation, and implementing design solutions that answer these needs may further enhance the inclusivity of the digital services that aim to enable societal participation for citizens. Factors stated as user needs in this thesis can also be applied as indicators for assessing eParticipations services. Additionally, recognising and emphasising the

factors that support societal participation of young people elucidated in this thesis may provide for more impactful eParticipation services.

The transdisciplinary citizen-centric socio-cognitive model for societal participation renders the previously epistemologically conflicting approaches to the research of societal participation, digital participation, and HTI as a cohesive and synergic premise. CCSCM provides for a holistic approach to research and facilitation of societal participation and is potentially a step towards a grand unifying theory through promoting simultaneous incorporation of relativistic, pragmatist, and empiristic epistemic approaches.

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APPENDICES

Appendix 1: Literature review details

Database / Search engine ->	**Scopus**		**Google Scholar**
Section title	**Full search string(s)**	**Subject area(s), limited to**	**Full search string(s)**
Human-centered design and user experience	TITLE-ABS-KEY (("human-centered design") OR ("user-centered design") AND (LIMIT-TO (SUBJAREA , "COMP")) TITLE-ABS-KEY ("user experience") AND (LIMIT-TO (SUBJAREA , "COMP"))	Computer Science	"Human-centered design" "User-centered design" "User experience"
Young people's societal participation	TITLE-ABS-KEY ((youth OR (young AND people)) AND (political OR societal) AND participation)	None	"Young people youth political societal participation"
Digital participation and eParticipation	TITLE-ABS-KEY (digital participation) TITLE-ABS-KEY (digital societal participation) TITLE-ABS-KEY (eparticipation)	None	"Digital participation" "Digital societal participation" "eParticipation"
Societal participation self-efficacy	TITLE-ABS-KEY (societal AND participation AND self-efficacy)	None	"Societal participation self-efficacy"
HCD and UX in the context of eParticipation	TITLE-ABS-KEY (eparticipation AND (user AND experience) OR (human centered design))	None	"Human centered design ux eparticipation"

ORIGINAL PUBLICATIONS

PUBLICATION I

Understanding the Digital and Non-digital Participation by the Gaming Youth

Pietilä, I., Varsaluoma, J., & Väänänen, K.

LNCS Volume 11747, 2019, p. 453-471. Presented at 2019 IFIP TC13 INTERACT 2019.

Understanding the Digital and Non-digital Participation by the Gaming Youth

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Abstract. It is important for the inclusiveness of society that the youth actively participate in its development. Even though the means of digital participation have advanced in the past decade, there is still lack of understanding of digital participation of the youth. In this paper, we present a study on how youth aged 16-25 years perceive social and societal participation and more specifically, how youth currently participate in non-digitally and digitally. We conducted a mixed method study in a large gaming event in Finland using a questionnaire (N=277) and face-to-face interviews (N=25). The findings reveal that the gaming youth consider digital participation to include discussions in different social media services or web discussion forums. Creating digital content (e.g. videos) and answering surveys were also emphasized. Perceived advantages to participate digitally include the freedom regarding location and time, ease and efficiency in sharing information, and inexpensiveness. Central disadvantages include lack of commitment, anonymity, misinformation and cheating. We also found that frequently playing gamers are more likely to participate online in social activities than those who play occasionally. Youth who reported that they play strategy games were more active in civic participation than those who do not play strategy games. We discuss the implications of our findings to the design of tools for digital participation.

Keywords: Youth, Gaming, Games, Digital participation, Societal participation.

1 Introduction

The participation of Finnish citizens has decreased significantly during the last three decades (Pessala, 2009; Myrskylä, 2012; Sutela et al., 2018). By lack of participation, we refer to people who do not participate in the processes of society, and people that are not employed or in education (Myrskylä, 2011). The Finnish National Institute for Health and Welfare (THL) (Isola et al., 2017) define participation ("osallisuus" in Finnish) to be 1) The ability to decide about one's own life and the possibility to regulate one's own doings, 2) engaging in processes that have effects in groups, services, living environments, and in the society, 3) local, when one is able to participate and contribute to the common good, and 4) to engage in creating meaningfulness and experience social relationships. Participation is also described to include the processes that the youth is able to be involved with, for instance education, environment, and housing.

Participation can make the young people able to engage with issues of their choice, and to engage actively without the preset adult agencies. (Checkoway, 2011.) According to Michels and De Graaf (2010), it is crucial to enable citizens to participate in various societal processes and decision making to improve democracy. Stolle & Hooghe (2011: 120) summarize the changes in participation affiliated with the past decades "…citizens today, especially younger generations, seem to prefer participating in the extra-parliamentary realm, in non-hierarchical and informal networks, and in a variety of sporadic campaigns that are not institutionalized."

Although youth participation and gaming have been studied extensively, it seems that the number of studies on the relationship of different kinds of digital gaming habits and participation is very limited. The public discourse related to gaming is controversial, and gaming is sometimes affiliated with social hardship (e.g. Przybylski 2014). In this study, our goal was to understand youth's perceptions and motivations for digital and non-digital participation. We also elucidate how participation and societal satisfaction could differ between frequent and less frequent young gamers, and young people who play different genres of digital games. As a practical contribution, we also propose design implications for digital services that aim at motivating youth to participate in societal discussion.

2 Background and Related Work

2.1 Youth's Digital and Non-digital Societal Participation

According to Meriläinen et al. (2018), digital participation can be for instance reading blogs and answering digital surveys. Sæbø et al. (2008) assert that eParticipation activities can include but is not necessarily limited to voting, taking part in political discourse, and decision-making. In this paper, we use the concept of digital participation to denote a wide spectre of participational activities, similar to what Meriläinen et al. (2018) define digital participation to be. In Figure 1, we have described how participation, digital participation and eParticipation relate to each other in the context of this paper. Pessala (2009) arguments that the otherwise politically passive young people are primarily interested in political activities that happen online, which might play a key factor to succeed in enhancing active participation and citizenship.

Fig. 1. Relationships of participation, digital participation and eParticipation in the context of this paper.

eParticipation or electronic participation denotes a form of participation in which information and communication technology is applied. eParticipation can be used to address the participation of individual persons, groups or governmental policy-making parties. (Albrecht et al. 2008). Panopoulou et al. (2014: 195) refer to electronic participation as "...the use of information and communication technologies to enhance political participation and citizen engagement." Sæbø et al. (2008) state that eParticipation has an intrinsic goal in enhancing active citizenship by enabling wider accessibility and availability of ways of engagement allowing society and government to grow fairer and more efficient. It is further discussed that "e" in eParticipation refers to the use of information and communication technologies, especially the Internet. However, meaning of "participation" might vary and it can be used to refer to "taking part in communal discussion or activity, or in the sense of taking some role in decision making". On more general level, eParticipation can be associated ambiguously with political deliberation and decision-making, and can occur in formal or informal settings. (Sæbø et al. 2008).

According to Meriläinen et al. (2018), obstacles among youth for participating in digital settings include absence of interest, belief of lack of impact, inadequate communication between youths and officials, and having no knowledge of the channels to utilize. In a literature review, Ianniello et al. (2018) capsulize the key dimensions obstructing participation to be information inaccessibility, officials' attitudes, community representations, process designs, group dynamics, and collaboration quality. Ianniello et al. (2018) also summarize that to overcome these obstacles, long-term interaction, involving participants in research, diversity, participation institutionalization, allowing multiple participation methods, and clarifying rules and mechanics must among other solutions be addressed.

Digital participation can also be approached through addressing the relationship of the Internet and political participation. Polat (2005) dissects the Internet enabling

participation in three different dimensions: The Internet providing information, the Internet functioning as a communication medium, and the Internet functioning as a virtual public sphere. Polat (2005) also criticizes the existing tendency to think that the Internet is a technology first and information sharing and communication enabling platform second, which might accentuate technological determinism in the affiliated discourse. Pessala (2009) states that digital participation can be seen as a wider way of engagement than just participation through political parties, and it can also be used when referring to electronic societal participation.

In this paper, we use "Societal participation" to denote the participation of an individual or a group of individuals in the processes of the society, such as voting or participating in decision making, or engaging in political discussions. According to Harris et al. (2010), societal participation can also mean for instance joining a political party. In the context of this paper, "Social participation" means the participation of an individual or a group in various social and interactive processes that can take place between two or more people. These processes include constructions such as for instance friendships and hobby or other group activities. Kowert et al. (2014) describe social participation to include e.g. experience of being a part of a group. "Social digital participation" is used in this paper to denote the manifestation of these social participation activities happening in digital realms, being for instance online friendships, chatting, or social gaming.

2.2 Gaming and Digital Participation

Similarly, as for instance in USA, the vast majority of the young people play digital games in Finland (Pelaajabarometri, 2018; Lenhart et al., 2008). As the nature of gaming is ubiquitous, studying the varying habits related to it might offer valuable insight on how to model successfully possible elements in systems that aim to enhance youth participation. Lenhart et al. (2008) state that gaming is a comprehensive phenomenon that is relevant to the lives of majority of the youth despite of for instance socioeconomic status. It is also articulated that online gaming poses a key role in young people's social interactions.

The study conducted by Lenhart et al. did not exhibit a connection between the amount of gaming and the participation in civic or political activity of youth. Furthermore, it is said that there might be differences in engagement in political activity between those who play with others in physically same space and those who play with others only online. These activities include getting information on politics, participating in charity, being committed to civic participation, and persuading others to vote in election. In addition, the meta activities related to gaming, that can be for instance participating in game related discussions online and engaging in activities in gaming communities, are linked to higher civic and political engagement. (Lenhart et al. 2008). Ferguson & Garza (2011), state that online social activity could be higher among those who play action games, but gaming is not linked to civic engagement in either way. However, their finding suggest that among action game players the parent's involvement can have a positive effect in the gaming youth's civic participation, whereas similar effects were not present in the non-gaming youth. It is further discussed

that the multiplayer dimension with shared goals may contribute to the positive outcomes of gaming (Ferguson & Garza, 2011). Lenhart et al. (2008) established no link between civic activities or attitudes and gaming. Still, the teens that had played games that offer social experiences like helping other players, learning about societal problems, and facing moral or ethical dilemmas reflected significantly higher civic engagement than those, who did not have such experiences. These activities included raising money for charity, getting information on politics online, and participating in protests.

3 Studying the Gaming Youth's Digital and Non-digital Participation

This study is part of a multidisciplinary research project exploring the capacities of young people (aged between 16 and 25) and the obstacles that hamper their engagement with society. This study is one of the several studies aiming to understand the perceptions and motivations of youth in relation to digital participation. One of the focus areas of the research project is in supporting the design of digital services that can motivate youth taking part in societal activities on different levels, from local to national level participation. The gaming youth are an interesting group to study since they are active in digital surroundings and may have specific motivations for societal participation.

The following research questions were formed:

RQ1: What kind of perceptions (e.g. definitions, and positive and negative aspects) do the gaming youth have about digital participation?
RQ2: What kind of obstacles and motivations do the gaming youth have for societal participation?
RQ3: How do types of digital and non-digital participation vary among different kinds of gamers?
- 3A: Are there differences in societal participation or digital or non-digital social participation between frequent and less frequent gamers?
- 3B: Are there differences in societal participation or digital or non-digital social participation between game genres played?
- 3C: Are there differences in personal life and societal satisfaction between frequent and less frequent gamers?

3.1 Participants

Data was gathered with a questionnaire and interviews (see chapter 3.2). Altogether 277 people answered the questionnaire. Participant age varied between 16 and 25 years, mean and median age being 20 years. Roughly, a third of the participants were under eighteen years of age. Three quarters of participants reported their gender to be male (n = 206), one fifth identified as female (n = 58) and 12 participants identified as other or did not want to disclose their gender.

According to the Finnish gamer barometer (Pelaajabarometri 2018), almost all of the Finnish people aged between 10 and 75 years play games generally. Digital games are played by more than two thirds. It is also asserted that 97 % of 10-19-year-olds and 91 % of 20-29-year-olds play digital games more frequently than weekly. Barometer states that, ⅓ play daily and ⅔ play weekly, but in this study, ⅔ of the respondents play daily and ⅔ play weekly. In this study, the respondent's gaming is more frequent than in national barometer on average (Figure 2).

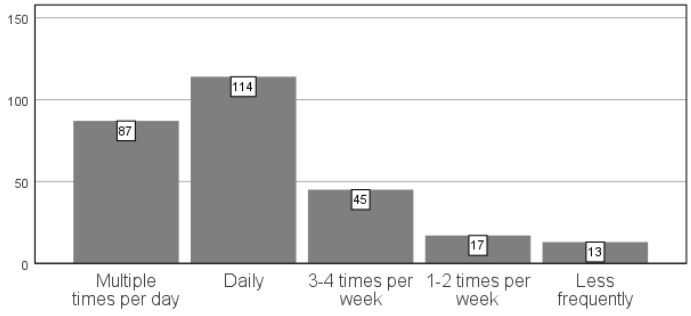

Fig. 2. Respondents' gaming frequency.

In total 25 people participated the interviews. Age of the participants ranged between 16-25 years (average 20.4 years, with standard deviation 3.5 years). Sixteen were male, 8 female and one identified as other. From the participants, 16 were studying full-time, 6 were working part-time or full-time and 3 were unemployed. The level of education ranged from 9 primary school students to 7 vocational school students, 7 high school graduates and one with a university degree. All participants were familiar with gaming culture and games in general. Only one person (ID19) was not actively playing games as a hobby at the time of the study.

3.2 Procedure

Data was acquired at the Assembly 2018. Assembly is an event about digital culture and arts, electronic gaming, and meeting old and new friends. Assembly is organized at the Expo and Convention Centre of Helsinki, located in Helsinki, the capital city of Finland. Over 5000 friends of digital arts and culture, demoscene, and gaming attend assembly every year. Most of Assembly visitors are of suitable age (From 16 to 25 years), and presumably active users of various digital services thus offering a plausible venue for conducting the study. Assembly 2018 was organized during 2.-5.8.2018.

Participants were able to answer the questionnaire both online and offline. The online version was executed on Webropol survey tool and could be taken at any suitable time during the event on participants' own device. The participation link was

distributed to the event visitors through event website and on the event Facebook page. The questionnaire link and a small commercial of the research project was visible on info screen in the main hall. Mobile devices were supported by the online questionnaire. Researchers administered offline version during daytime on paper. Paper questionnaires were answered on-site next to the project's stand. All the participants were able to take part in lottery to win gift cards, regardless of the medium. In addition, participants were offered sweets at the stand after answering the questionnaire.

In addition to the questionnaire, interviews were conducted with the youth participating the Assembly event. People walking past or stopping by the stand were actively invited to take part to the interviews. At the beginning of the interview, participant answered a short background questionnaire on a paper. The interview sessions were audio recorded and varied from 17 to 69 minutes, with most interviews taking half an hour. After the session, participant was awarded with a movie ticket.

3.3 Instruments

A questionnaire and interview aimed for youth (age 16-25) were prepared in order to study the research questions. Questionnaire consisted of 11 main questions and had seven additional open-ended questions. Paper version of the questionnaire was laid on 11 pages. Five of the main questions were Likert scale questions consisting of 5-10 claims that were to be assessed on a scale of 1-7, 1 being "Fully disagree" and 7 being "Fully agree". Eighth option on the scale represented answer "I do not know or do not want to say / Does not apply to me". Lastly, also the background variables were inquired with optional participation to lottery. Participants were additionally able to give feedback on the questionnaire by assessing suitability of questionnaire length and how interesting the questions were. Background questions consisted of age, gender, nature of living area, postal number, province, marital status, employment status, and educational level. Main questions concerned the amount and frequency of playing digital games, gaming platforms and genres, ICT skills, societal participation, society and personal life satisfaction, social relationships, digital social participation, social gaming, and online relationships. Open-ended questions inquired news consumption habits, obstacles for participation, desires to legislative changes, and future dreams and aspirations. Formed sum variables and questions are described more specifically in Table 1.

A semi-structured interview was prepared to study youths' perceptions regarding different topics. Interview themes included societal and digital participation, gaming culture, future plans and dreams, future technology trends, and legislation. In this paper, the focus is in the results related to the themes of societal and digital participation. In the questions related to the societal participation, participants were asked how they have previously participated in political discussions, societies/clubs/associations, voluntary work, or other activities related to their living environment or society. These questions were followed by asking about the reasons for not participating and factors that motivate or could motivate participation in these activities. Next were the questions related to digital participation. Participants were asked to define "digital participation" and if they had utilized digital services to participate in the previously discussed societal

activities. Finally, the positive and negative aspects of digital participation were discussed.

In summary, data used in this study consists of 277 respondents in questionnaire that consists of 18 questions and background questions and interviews of 25 participants with two interview themes included in the study.

Table 1. All the sub variables and formed sum variables presented with their Cronbach's alphas. * Ylilauta is a Finnish image and conversation board (http://www.ylilauta.fi)

Sum Variable	Social Participation	Digital Social Participation	Personal life satisfaction	Societal participation
Variable 1	I constantly feel myself lonely (REVERSED)	Online gaming has a significant role in my friend relationships	I am satisfied with my life as it is	I discuss timely domestic or foreign events with my friends or family often
Variable 2	I enjoy other people's company	A significant part of my social interactions happen online (for instance in games, social media or chats)	I am satisfied with my work / studies / other professional status	Under 18: I would vote in the next election if i could / Over 18: I will vote in the next election
Variable 3	I feel like I am a relative part of some group or team	I produce content in image boards or message boards (Like for instance Ylilauta* or 4chan, for instance text or images)	I have good daily routines	I feel like I would succeed well if I were to rationalize and discuss my views on some controversial political or societal question
Variable 4	I believe that others enjoy my company	I read / watch content on image boards or message boards (Like for instance Ylilauta or 4chan)	I am satisfied with my free time	It is easy for me to find a suitable political party
Variable 5	I like doing things with others			I am interested in politics
Variable 6	I have good friends			I read / watch the news to get information on timely events
Variable 7	I get new friends easily			
Number of items	7	4	4	6
Cronbach's Alpha	.88	.70	.82	.81
Distribution is normal	No	Yes	No	No

3.4 Analysis

Overall sampling size is 277 after removing inappropriate subjects. For analysis of quantitative data, threshold for statistical significance alpha value of .05 was selected. A Python script was written to execute the two-tailed Mann-Whitney-U test on a set of multiple dichotomous variables.

Running a factor analysis for test variables was considered appropriate as KMO test value was .787 and Bartlett's test of sphericity produced a significant value ($p < .001$, df = 210). After addressing the Scree plot, maximum quantity of components was set

to four. Principal component analysis was chosen as extraction method and rotation was done with Varimax. Factor loadings for each observed variable are represented in Table 2. Values under .300 were excluded from the table for clarity. Factor analysis results suggest a rather clear positioning of the observed variables in the four distinct components. However, some of the variables under the construct "Social participation" seem to contribute also to construct "Personal life satisfaction".

Table 2. Loading and cross-loading values for each observed variable in four factors

	Loading in each factor			
Observed variable	**1**	**2**	**3**	**4**
I enjoy other people's company	0.783			
I like doing things with others	0.761			
I believe that others enjoy my company	0.725		0.340	
I have good friends	0.724			
I get new friends easily	0.719			
I feel like I am a relative part of some group or team	0.636		0.378	
I constantly feel myself lonely REVERSED	0.467		0.399	
I am interested in politics		0.823		
I feel like I would succeed well if I were to rationalize and discuss my views on some controversial political or societal question		0.792		
I often discuss with my friends and family the current events abroad or in Finland		0.790		
I read / watch the news to get information on current events		0.630		
Under 18-yo: I would vote in the next election if I was eligible / Over 18-yo: I will vote in the next election		0.609		
It is easy for me to find a suitable political party		0.506		
I am satisfied with my life as it is			0.845	
I am satisfied with my work / study / other professional status			0.830	
I am satisfied with my free time			0.807	
I have good daily routines			0.590	
A significant part of my social interactions happen online (for instance in games, social media or chats				0.835
Online gaming has a significant role in my friend relationships				0.764
I read / watch content on image boards or message boards (Like for instance Ylilauta or 4chan				0.692
I produce content in image boards or message boards (Like for instance Ylilauta or 4chan, for instance text of images				0.617

Questions related sum variables were created and can be seen in Table 1. All sum variables except one received more than α = .70 as their Cronbach's alpha value reflecting an acceptable or good inner consistency. Additionally, the sub variables were inspected in a cross-correlation matrix. Sum variables were tested for their distribution normality with Kolmogorov-Smirnov and Shapiro-Wilk tests and the distributions were also visually assessed. The used tests are explained in more detail along with the results.

Interviews were transcribed and qualitatively analyzed by categorizing similar responses to categories that were derived from the data. Similar categorization process was followed with the open questions of the questionnaire.

4 Results

4.1 RQ1: What kind of perceptions do the gaming youth have about digital participation?

How did the interview participants define "digital participation"? The most often mentioned aspect (11/25 respondents, 44%) when defining digital participation related to utilizing social media services, such as Facebook, Twitter or WhatsApp. Six respondents (24%) considered that digital participation includes active participation in discussions (e.g. Slack) or discussion forums in the Internet (e.g. Reddit, 4chan). For instance, one respondent (ID9) commented that digital participation is "something more clever than evening paper's comment section. I don't consider that yet as digital participation, but taking part in discussion forums. I am mainly in Slack and some hobby-specific subreddit. Maybe 4chan is counted [as digital participation], maybe not". Four participants (16%) emphasized the creation of digital content in the Internet, such as videos, graphics and texts as a way of participation. Three mentions (12%) related to answering or creating own digital surveys and two people mentioned commenting or liking existing content as a way of participation. Rest of the individual comments related to citizen's initiatives in the Internet, voting (in web), web courses for teaching, taking part in software development, and "doing something together in different locations" e.g. charity.

When asked about the positive aspects of digital participation, the following topics were brought up: 1) low threshold for participation because you can do it on your own time, from any location (e.g. from a bus in countryside) and it suits for anyone (e.g. introvert personality, people with disabilities), 2) sharing information and reaching people is easy and fast, 3) organizing e.g. events via digital channels is cheap and easy, and 4) the freedom of expression. Negative aspects in relation to digital participation included the following: 1) lack of commitment as it is easy to ignore or change one's mind about participation e.g. in event, 2) anonymity leads more easily to aggression, harassment and unfriendly behavior, 3) misinformation and provocation ("trolling"), 4) misuse, cheating and hijacking (e.g. Twitter hashtag), and 5) technical issues (e.g. poor Internet connection or web-cam).

4.2 RQ2: What kind of obstacles and motivations do the gaming youth have for societal participation?

The questionnaire results (N=217) regarding the sum variable Societal participation (scale 1-7, 6 items, see Table 1) suggest that the gaming youth perceive themselves as slightly more towards active in societal participation (Mean = 4.64, SD = 1.29).

In the interviews (N=25), participants were asked how they have previously participated in political discussions, societies/clubs/associations (e.g. non-governmental organizations), voluntary work, or other activities related to their living environment or society. First, regarding politics, 12 out of 25 participants tend to discuss politics, some rarely and others more actively, with their family or friends, but 10 of them not in any public channel. News from politics are followed with varying

interest, mainly from digital newspapers and social media sites (7 respondents), such as Facebook and Reddit. Few examples of different political activities were brought up: one respondent had participated in protest marches and one had signed a petition. In school context, two people had participated in student council and one in a "parliament club". From digital participation perspective, examples from individual respondents included 1) answering digital surveys about political parties (ID12) or life in the city (ID19), 2) sharing references to information sources in social media discussions (ID8), 3) discussing political topics during live video stream (ID8) or creating political videos (ID6) in YouTube, and 4) participating in Slack discussions for preparing a feedback for a legislative proposal from European Aviation Safety Agency (ID9).

Next, the results concerning obstacles for gaming youths' participation in societal/political discussions are presented. This topic was included in both the questionnaire and interviews. Figure 3 presents the questionnaire results, illustrating the main reasons that gaming youth propose for not taking part in societal discussions.

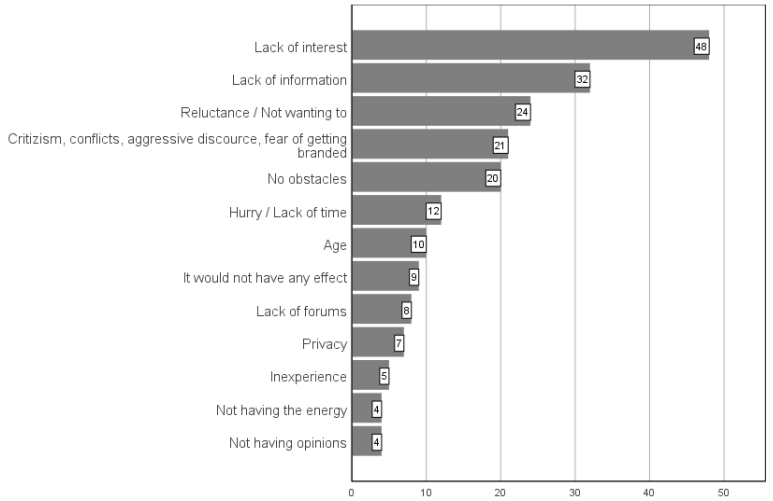

Fig. 3. Categorization of the questionnaire responses to the open question "Reasons that prevent me from taking part in societal discussions are…" The following single responses were also received: unspecific fear, religion, poverty, language barriers, and ethnic background. (N=277).

The interview results are in line with the questionnaire results, suggesting that the main reasons for youth not being more active in political discussions are 1) lack of interest (7 out of 25 responses), 2) conflicts, aggressive discourse (5), 3) lack of information (3), 4) not a suitable life situation due the young age (3), and one of each of the following: it would not have any effect, no opportunities to have an impact, lack of

political discourse in family or with people around you, badly moderated discussion forums, things happen too slowly, and "all that you put in the Internet stays there".

What would motivate youth to take part in political discussions? This was asked in the interviews. The motivational factors included the following: 1) topics relevant for oneself or one's own life (e.g. student life, sexual minorities, the environment, morally meaningful choices) (4 responses out of 25), 2) topics that are interesting (e.g. political science, technology, games) (3), 3) desire to share your opinion (e.g. in contrast to your friend's opinion, because of your own persona, or in order to provide facts to the discussion) (3), 4) visible results from your activity in the community or in relation to your goal (2), and one of each of the following motivational aspects: friends' activity and opinions, clearly presented information aimed for young people, meeting politically active youth such as youth parliament representatives, supporting candidates with similar interests, opinions that strongly differ from yours, restricting your rights, acknowledging individuals when evaluating impacts of decisions, and safe environment for youth to present their opinions.

4.3 RQ3: How do types of digital and non-digital participation vary among different kinds of gamers?

3A: Are there differences in societal participation or digital or non-digital social participation between frequent and less frequent gamers?

Results shown in Table 3 and Figure 4 suggest that people who play more often might be more active also in other social digital activities. Running a Kruskal-Wallis test on variables "Social participation" (χ^2 (4) = .78, p = .94) and "Societal participation" (χ^2 (4) = 4.74, p = .32) in classes of gaming frequency did not exhibit a statistically significant difference. However, a statistically significant difference was found in variable "Digital social participation" in categories of gaming frequency when testing with one-way ANOVA [F(4, 258) = 7.05, p < .01]. Post-hoc comparison using the Tukey HSD test revealed multiple differences between groups indicating increased values in variable "Digital social participation" among categories of more frequent gamers than categories of less frequent gamers. In Table 3, the statistically significant differences are described in more detail, each category mean is displayed and significance values (p) of differences between categories are presented.

Table 3. Statistically significant differences in variable "Digital social participation" between categories of gaming frequencies. In addition, category means and significance p-value of each difference are displayed.

Category	Mean	Category	Mean	*p*
Multiple times per day	4.46	3-4 times per week	3.69	.02
Multiple times per day	4.46	1-2 times per week	3.35	.03
Multiple times per day	4.46	Less frequently	2.60	< .01
Daily	3.96	Less frequently	2.60	.01

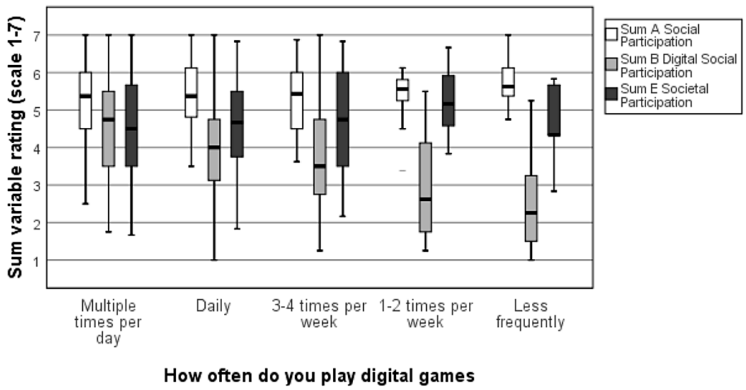

Fig. 4. People who play more often, might be more active in other digital social settings also – a statistically significant difference was found for instance between categories "Multiple times per day" and "3-4 times per week" in variable "Digital Social Participation"

3B: Are there differences in societal participation or digital or non-digital social participation between game genres played?

Multiple statistically significant differences between whether a certain genre is played or not were found in various sum variables. For instance, the results assert that respondents that reportedly play strategy games would be more likely to participate in societal activities ($U = 4178$, $p < .01$). This difference is presented in Figure 5.

In the light of effect sizes, especially the difference between those who play shooter games and those who do not in the variable "Digital Social Participation" is exceptionally noticeable ($d = .81$), and the difference between those who play strategy games and those who do not in variable "Societal participation" ($d = .45$) as these effect sizes can be considered large and medium respectively.

In Table 4, all the statistically significant differences in corresponding dependent variables between playing or not playing a specific genre are displayed with both categories medians, Mann-Whitney-U values and *p*-values. Also, effect sizes are displayed in the table. Rest of the effect sizes remain small, however none of the effects of statistically significant differences between categories of playing or not playing distinct genres should be considered trivial or non-existent. Genre "Shooters" should be approached with care, because the number of those who did not reportedly play this genre, is only 28. For instance, strategy gaming genre on the other hand represents a good balance between those who play or do not play games that belong to this genre (Yes: 133, No: 84). Number of observational units in each genre under each category are also displayed in the table under column "Played Y/N".

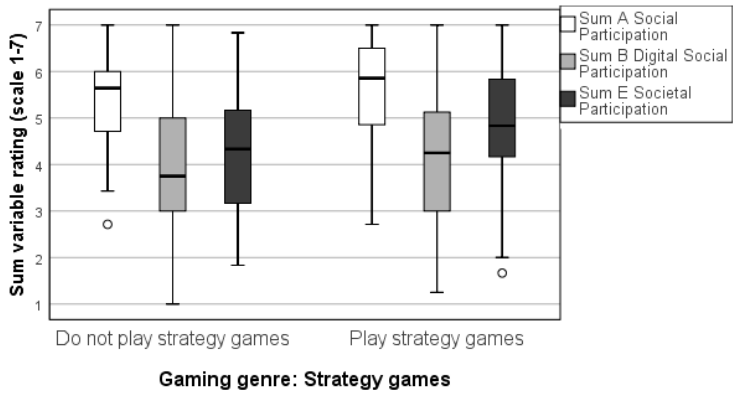

Fig. 5. A statistically significant difference between those who play strategy games and do not play strategy games was found in sum variables "Digital Social Participation" and "Societal Participation", indicating that strategy game players might be more prone to societal activities.

Table 4. Statistically significant differences in sum variables between categories of playing or not playing a certain gaming genre

Gaming genre	Sum variable a difference was found in	Median Yes	Median No	Played Y/N	*U*	*p*	Effect size (*d*)
Puzzles and Card games	Societal Participation	5.00	4.50	63/154	3900	.02	0.34
Shooters	Social Participation	5.71	6.14	235/27	4135	.01	0.41
Shooters	Digital Social Participation	4.00	3.25	236/28	1939	< .01	0.81
Strategy	Societal Participation	4.83	4.33	133/84	4178	< .01	0.45
Action	Digital Social Participation	4.00	3.75	152/112	7144	.03	0.29
Simulation	Societal Participation	5.00	4.50	76/141	4221	.01	0.40
Multiplayer Online	Digital Social Participation	4.00	3.75	157/107	7004	.02	0.32
Multiplayer Online	Societal Participation	4.67	4.33	124/93	4800	.03	0.31
Roleplaying	Digital Social Participation	4.25	3.75	101/163	6489	< .01	0.36
Roleplaying	Societal Participation	5.00	4.33	84/133	4404	.01	0.37
Online roleplaying	Digital social participation	4.25	3.75	57/207	4836	.04	0.33

3C: Are there differences in personal life and societal satisfaction between frequent and less frequent gamers?

The study results suggests that the people who play multiple times per day are less satisfied with the Finnish society than those who play only daily. Executing the Kruskal-Wallis test on variable "Personal Life Satisfaction" in categories of gaming

frequency variable did not show a statistically significant difference (χ^2 (4, N = 267) = 1.99, p = .74). However, a statistically significant difference was detected in the sum variable "Finnish Society Satisfaction" when comparing categories of gaming frequency (χ^2 (4, N = 206) = 13.66, p < .01). Running a Dunn's post-hoc test reveals a statistically significant difference between categories of gaming frequency "Multiple times per day" and "Daily" (χ^2 (4, 206) = 13.66, p = .02). No other statistically significant differences were found between categories.

5 Discussion

The activities that the interviewed youth affiliate with digital participation were mainly related to social media use, activity in discussion forums, creating digital content and answering digital surveys. Similar activities were suggested in Meriläinen et al. (2018). Only a few described activities related to digital participation were related to eParticipation activities as described by Sæbø et al. (2008). These included voting and starting citizen's initiatives in the Internet, as a way of taking part in political discussions or decision making that are some of the key aspects of eParticipation. Furthermore, the array of obstacles for youth participation in digital setting found in this study is analogous to the proposed obstacles by Meriläinen et al. (2018). However, this study suggests some additional obstacles, in specific fear of conflicts and young age, although the latter can relate to the belief of lack of impact.

Also, the results related to gaming and its relationship to participation are mostly coincident with the research executed by Lenhart et al. (2008), as for instance the digital social activities show higher rating among those who play action games compared to those who do not play action games. Similarly, no statistically significant difference was found in societal participation between more or less frequent players. The difference between people who play or do not play a game of certain genre in the variables "Social Participation" and "Societal Participation" could be affiliated with the contents and mechanics of the games. Lenhart et al. (2008) assert that playing games that include social experiences, helping others, and facing moral dilemmas, can be linked to heightened civic engagement. The game genres that exhibit in this study these kinds of positive phenomena, do in some instances include the described activities: In strategy games, resource division problematics are addressed and multiplayer online games include social activities and helping others, and these indeed were, among others, the genres that showed positive effect in societal participation.

5.1 Implications to the Design of Digital Services that Activate Youth to Societal Participation

Based on the results of our study we propose the following initial design implications for digital services that aim at motivating youth to participate in societal discussion and other activities.

Providing safe environment for youth participation. The environment should be user-friendly and supportive towards newcomers, those interested but not yet familiar

in political debate. Many young people are afraid of conflicts and discussions about sensitive topics such as immigrants. Therefore, discussion area should include clear rules and be well moderated in order to prevent inappropriate behavior, such as personal insults and harassment. In addition, it could be emphasized that the they are not too young to participate.

Offering information that entices participation. Lack of grounding information was one of the main obstacles for participation. There should be sufficient depth of background information about the topics to enable insightful discussion. The service should offer easy access and means for finding areas of own interest (e.g. tags, favorites, recommendations). Furthermore, the subject matters should be presented in an interesting way, targeted at the youth - for example, in a visual way, instead of long textual descriptions. Possibilities of applying information representation conventions from games should be considered in for instance showing societal objectives, progress, and resources.

Matching digital participation to personal needs. Youth's interest to participate in societal discussions varies greatly. Participation should be enabled on different "requirements levels", for example for users who can spare little time and effort, and for people who have more motivation to dig deeper into the topics. The digital service could offer match making between youth of similar "spirit" - and at the same time avoiding users staying solely in the circles ("bubbles") of like-minded people.

Rewarding participation. The users should be able to see the results of their own activities easily and concretely, e.g. through visual indicators. The system could provide the users with some kind of digital or even physical reward. Digital rewards, such as badges, could be posted within the same service but also in users' other social media services - naturally only with the user's permission.

5.2 Study Limitations

Although the study has been conducted with great regard to data acquisition, handling, analysis, and reporting, some limitations need to be mentioned. The questionnaire question sets have not been validated in a large-scale study and thus the indicators can be limited in their reliability, however they were applied and combined from several credible studies, and reviewed by three researchers. In addition, the results of the conducted factor analysis further reflect sum variable validity. In addition, the inner consistency was considered high in all the sum variables that exhibited statistically significant discrepancies, which can reflect instrument reliability. The sum variable "Digital Social Participation" had a ¼ of its value from online gaming and thus might be biased, as respondents were mostly active gamers. It also must be mentioned that the results are generalizable only in a certain section of Finnish youth, as for instance gaming amount related variables differ from the national equivalent. Considering the abovementioned limitations in instruments and analysis, the effect sizes are additionally addressed in relation to the results and sincerely described. Also, the Bonferroni (in which, the significance value is multiplied by each pairwise test in set) correction method is used in subsequent testing scenarios where applicable. Finally, the qualitative

interview data were analyzed and categorized by a single researcher, while with multiple analyzers there could have been some differences in the final categorization.

5.3 Future Work

In our future work we are conducting field studies of the youth's participation behavior. Furthermore, we will do design research on how, using participatory design methods, various youth groups could be motivated to digital societal participation. One of the approaches used in the human-centered design of novel digital services is gamification, which is a promising approach for digital service design (e.g. Deterding et al., 2011; da Rocha Seixas et al. 2016; Gabarron et al. 2013). This approach is expected to be valuable for both gaming and non-gaming youth, and it may give rise to novel forms of participation. In the coming two years, we will design and implement digital service prototypes and utilize them in actual youth participation tasks such as city planning, work mentoring and commenting of legislative proposals.

6 Conclusions

This study produced relevant information on the societal and social activities and tendencies exhibited by the gaming youth. In specific, the findings point out that there are several obstacles for societal participation but also a multitude of motivators that can be used to understand requirements for design for societal inclusion. The findings shed light to the phenomenon of youth participation as part of the development of inclusive society. The proposed design implications can be applied when designing digital services for the youth. The findings contribute to the field of HCI by providing insights of youth's needs and motivations to use digital services for societal participation. The suggested design implications can give guidance for developers of digital services for youth participation. Designers should aim to remove the identified obstacles and support user motivation by providing safe environment for youth participation, offering information that entices participation, matching digital participation to personal needs, and by rewarding active participation.

7 Acknowledgements

We are grateful to the reviewers for their time and effort. We thank Niina Meriläinen, Eero Saukkonen, and Marika Hölttä for their support in data acquisition.

The research was funded by the Strategic Research Council at the Academy of Finland, project ALL-YOUTH with decision no 312689.

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PUBLICATION II

Understanding youths' needs for digital societal participation: towards an inclusive Virtual Council

Pietilä, I., Meriläinen, N., Varsaluoma, J., & Väänänen, K.

Behaviour & Information Technology. Taylor and Francis.

Taylor & Francis
Taylor & Francis Group

Behaviour & Information Technology

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/tbit20

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To cite this article: Iikka Pietilä, Niina Meriläinen, Jari Varsaluoma & Kaisa Väänänen (2021): Understanding youths' needs for digital societal participation: towards an inclusive Virtual Council, Behaviour & Information Technology, DOI: 10.1080/0144929X.2021.1912182

To link to this article: https://doi.org/10.1080/0144929X.2021.1912182

BEHAVIOUR & INFORMATION TECHNOLOGY
https://doi.org/10.1080/0144929X.2021.1912182

Understanding youths' needs for digital societal participation: towards an inclusive Virtual Council

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ABSTRACT

It is important for the sustainability of society that everyone can participate in societal discussions. Although a plethora of services exists for digital participation, they have not proven to entice a broad range of youths to contribute. The aim of this research is to investigate how digital tools can offer inclusive ways for youth to take part in societal processes. We present a study of young people's needs for a digital service enabling societal participation. Altogether 74 young people aged 16–27 with varying backgrounds participated in six workshops. Scenarios were used as stimulus materials for eliciting participants' feedback on digital participation. The findings bring up youth's needs for such service. Needs such as having a safe environment for discussions and making the effect of participation visible were found. Finally, the findings and resulting Virtual Council prototype are presented and discussed, and their significance in advancing inclusive digital societal participation are elaborated.

ARTICLE HISTORY
Received 31 January 2021
Accepted 26 March 2021

KEYWORDS
EParticipation; computing in government; digital participation; user-centred design; user need analysis

1. Introduction

The Finnish Youth Act (2016) defines young people to mean those under 29 years. In this paper, we use the term young people to denote people between 16 and 29 years. We use the term youth to denote a group of young people. Young people have vast differences in their tendencies, interests, and possibilities to participate in societal processes. By *societal participation*, we refer to various forms and levels of participation that span from grassroots actions to legislative processes. These include the more traditional forms of participation such as being a part in law-drafting through youth consultations, voting but also latent forms of participation (Ekman and Amnå 2012) such as consumer behaviour or various online activities. Similarly, as in study, by Newton and Giebler (2008), political participation is a central concept for this paper, but we approach participation as a broader set of activities that can be formal or informal and institution centric or non-institution centric to which we refer by societal participation.

Obstacles such as privacy-related issues, and lack of forums, information and effect (Pietilä, Varsaluoma, and Väänänen 2019) to participate have been identified. Also, the individual properties that are subjectively identified as obstacles for participation include for instance lack of interest and time, fear of conflict, reluctance and age (Pietilä, Varsaluoma, and Väänänen 2019). The possibilities for youths to participate in society should be enhanced to enable the sustainable development of society (Feldmann-Wojtachnia et al. 2010).

eParticipation possibilities such as websites and apps may not alone enable equal possibilities for societal participation as inequality related issues in offline participation tends to replicate online participation also (Oser, Hooghe, and Marien 2013). Different kinds of youths have different abilities to use digital devices, as well as possibilities due to matters affiliated with i.a., accessibility and usability (Meriläinen, Pietilä, and Varsaluoma 2018). Maier-Rabler and Huber (2010) argue that information retrieval skills are strongly affiliated with education among youths. They further assert that one way to enable a society to develop towards participatory culture is to enable youths' digital participation. In addition, they elaborate that youths must master technological literacy that enables societal change. Polat (2005) challenge the idea of digital platforms per se enabling the access to information for the masses. Thus, to provide more equal possibilities for societal participation through more considerate eParticipation service designs, the user needs for digital and online participation of also those who have had fewer opportunities to participate in their lives need to be addressed.

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To illuminate the user needs of different kinds of youths in the context of eParticipation services, we conducted a study. In this study, semi-structured group interviews were conducted in six settings: a preparatory vocational education group, high-school classes, and other groups of young people that are not in education or employed (NEET) with altogether 74 participants. Data from 58 participants were used for analysis as recordings including discussions of 16 participants were discarded due to technical issues. Through the interviews, we aimed to form an in-depth illustration of the needs of youths concerning eParticipation services.

Research on possibilities, such as having one's voices heard, but also dangers, such as bullying, has been growing in academia regarding young people and eParticipation (Kligler-Vilenchik and Literat 2020). Although the possibilities offered by the various eParticipation services have been studied, there seems to be a lack of research that concentrates on the user needs of the youths that do not have extensive experience in societal participation. The aim of this research is to understand the needs for such services for different kinds of youths. The central contribution of the study is the eParticipation user needs of young people, including the ones that have had fewer possibilities and experiences in societal or political participation. The findings can be applied in designing more inclusive eParticipation services and to tackle the previously recognised obstacles for participation. The processes that enable societal participation encourage citizens to participate more (Newton and Giebler 2008), thus the processes and services should be designed with high consideration of the needs of those who the society wants to participate, that is, all youths. Moreover, this paper continues to present an eParticipation service prototype in which the user needs are considered and implemented as design solutions. This service, Virtual Council, aims to enable the societal participation of the various youths.

2. Background and related work

In the following, the main concepts and related work are presented. First, the concepts of societal and political participation are discussed, and the ways that different youths participate in societal matters are elucidated. Second, the domains of digital participation and eParticipation are explained. Finally, the obstacles for participating in societal matters, digitally or otherwise, are discussed shortly. The wider debate on these issues is out of the scope of this paper.

2.1. Societal and political participation

The theoretical understandings of societal participation of youths in literature differ between academic fields. Pietilä, Varsaluoma, and Väänänen (2019) use the concept of 'societal participation' to denote the participation of an individual or a group in the processes of the society, such as voting or participating in decision making, or engaging in political discussions. In turn, Piškur et al. (2014) assert that (social) participation has not been explicitly defined. Hästbacka, Nygård, and Nyqvist (2016) argue that the complex concept of societal participation can mean various things and is highly contextual. The authors continue to state that the term 'societal' can be affiliated with other dimensions of society such as political participation or working. Some authors argue the connection between societal and political participation – for instance, Ekman and Amnå (2012) highlight the multidimensionality of both concepts.

However, societal participation is not only tied to traditional political participation such as being part in law-drafting or voting in elections. There are various understandings of societal participation in society at different levels. Varying understandings span from social change processes at grassroot levels to legislative levels. For example, Meriläinen, Pietilä, and Varsaluoma (2018) studied youth participation in societal issues in the context of a wider human rights perspective, of exclusivity and accessibility, as well as in the realms of digital services. Meriläinen and Piispa (2020) researched the societal participation of vocational school students and found many ways in which young people participate in climate change actions outside the traditional ways tied to institutions through consumer behaviour, grassroot activism and by using social media. In a more traditional sense of participation, Meriläinen, Heiskanen, and Viljanen (2020) studied youth participation in legislative studies and found that even when young people participate using official platforms, their participation is not reflected in final legislations.

One domain in societal participation is political participation, which according to the International Encyclopaedia of the Social & Behavioural Sciences (Elsevier 2015) refers to

> Voluntary activities undertaken by the mass public to influence public policy, either directly or by affecting the selection of persons who make policies. Examples of these activities include voting in elections, helping a political campaign, donating money to a candidate or cause, contacting officials, petitioning, protesting, and working with other people on issues.

In the same lines, van Deth (2001) defines political participation as 'citizens activities aimed at influencing political decision' and continues to list more definitions for the concept by Milbrath and Goel (1977), Verba and Nie (1972), Kaase and Marsh (1979), and Parry, Moyser, and

Day (1992), each and all of which include the concept of a citizen actively trying to have an influence on a governing actor. Similar to societal participation, definitions of political participation may vary between fields, and inconsistencies have been identified especially regarding the more novel ways of participation (e.g. Weiss 2020). Moreover, political participation definitions vary between researchers, adults, and youths, as a unifying consensus of *what is politica*l is missing (Weiss 2020).

In comparison to political participation, in this paper, societal participation can be described to also consist of the kinds of societal activities that are not recognised by political institutions or actors (e.g., Meriläinen and Piispa 2020), including various latent forms of political participation, civic engagement and social involvement similar to what Ekman & Amnå assert (2012). Moreover, Garcia-Albacete (2014, 15) refer to these emerging forms of participation as 'sporadic' and elaborate that they 'imply networks with loose connections that often result in individualised actions' referring to the work of van Deth (2010). García-Albacete (2014) additionally remarks that these phenomena are of interest to researches in the sphere of political research even though they are not regarded as political participation in all discourses.

Virtual Council is a prototype of an eParticipation service that aims to enable both, political and societal participation, and is introduced in Section 7, Virtual Council.

2.2. Youth participation and inclusion

According to the UN Agenda 2030 (2018) objectives, youths should play an active role in the development of their own surroundings, in achieving sustainable development goals at the grassroots levels as well as more widely in policy making. Fridays for Future moment has increased young people's participation in society globally. Also, the EU Youth Strategy 2019–2027 has a focus on engaging, enabling and strengthening the participation of EU's young people in policies and society at its various levels. Moreover, the governmental programme (2019) of Finland has a strong emphasis on the empowering and inclusion of young people. The programme states 'We will reinforce the obligation to consult young people and introduce new tools to develop it.' (2019–2027, 188) Perhaps an eParticipation platform that is designed based on user needs could be one of the services in this process.

One of the many ways to engage different kinds of youths may be by using eParticipation services to enable active roles. We know that youths use digital services (Granholm 2016). Perhaps the various youths can be empowered by being active and eParticipation services may help in this respect.

As this paper focuses on youth participation, we take note of the definition from Checkoway (2011) in which youth participation is regarded as a process that enables the involvement of the youth in instances and decision-making that influence their life. Moreover, Checkoway and Gutierrez (2006) previously added to the definition that youth participation includes the young people actually having an effect in the decisions that may concern them and young people not just being subjects to others' decisions. They further argue that more focus should be set on the quality of young peoples' participation instead of just counting, for example, how many took part in a hearing or voting. In similar manner, Farthing (2012, 73) states that youth participation is 'a process where young people, as active citizens, take part in, express views on, and have decision-making power about issues that affect them.'

Youth participation can be approached from the inclusiveness point of view also. Coppedge, Alvarez, and Maldonado (2008) assert that a majority of widely used democracy indicators measure contestation and inclusiveness. Robert A. Dahl (as cited in Feldmann-Wojtachnia et al. 2010) further elaborate that inclusiveness relates to the parameters which allow or disable a part of a population to participate in societal decisions. Young (2002) states that inclusion can also be used as a concept to describe such democratic decision-making and discussion in which all the concerned parties can be involved in. According to Young (2002), equally executed inclusion is essential in enabling sterling deliberation of various opinions and perspectives. Jackson (as cited by Rawal 2008) capsulises the concept of inclusion to the question of who is excluded from what and who is privileged to be represented. Through these definitions, it can be interpreted that to enable youth participation, the channels and structures need to incorporate inclusive solutions and thus consider the user needs of the various youths.

In this study, inclusivity is addressed by considering the user needs of youths from various backgrounds in relation to digital societal participation, that is, enabling many parts of the population (Feldmann-Wojtachnia et al. 2010) to express their needs in online environments in a user-friendly manner, and enabling representations of various youths (Rawal 2008) in the requirement definitions of eParticipation services. Inclusivity also refers to the possibilities of young people to participate without having to tackle various obstacles such as language barriers, lack of time and space, fear of bullying and conflict, and limits to freedom of

expression. Participant details and their varying backgrounds are further elaborated in Section 4.1.

2.3. Digital participation and eparticipation

Societal and political participation can also be approached from a dichotomous perspective: Online versus offline forms of participation. According to Oser, Hooghe, and Marien (2013), online activism can be regarded as a distinct domain of participation and that digital political participation incorporates similar socioeconomic status related inequalities as offline participation. Possibilities and tendencies to participate accumulate to the empowered groups through factors such as education level, wealth, age, and gender (Oser, Hooghe, and Marien 2013). However, in their study, Oser, Hooghe, and Marien (2013) highlighted that if a population is separated into online and offline activists, the online group is more likely to comprise young people.

Pietilä, Varsaluoma, and Väänänen (2019) assert the concept of digital participation to consist of various activities that take place in digital realms including for instance utilising social media services or discussing in, for example, Slack or on forums, such as Reddit. Digital participation can also be used to denote activities such as survey answering or reading and producing blogs (Meriläinen, Pietilä, and Varsaluoma 2018). eParticipation refers to promoting political participation and citizen engagement through the use of ICT-tools (Panopoulou, Tambouris, and Tarabanis 2014) and to the use of ICT technology by individuals or groups when participating in societal issues (Albrecht et al. 2008). eParticipation is also said to have adapted the goal of promoting civic engagement through making the related activities more available (Sæbø, Rose, and Skiftenes Flak 2008). The concept of digital participation can be seen as a very versatile activity and is not necessarily restricted to only participating in political or societal issues in contrast to eParticipation (Pietilä, Varsaluoma, and Väänänen 2019). Sanford and Rose (2007) approach eParticipation as i.a. contributing to a shared activity which is connected to decision-making and is executed through ITC, usually the Internet.

In this paper, digital participation is viewed as a broad concept that can include societal activities such as eParticipation but also activities that are not traditionally viewed as societal participation. These activities can include for instance social media discussions or linking posts on social media as young people mentioned in a study by Meriläinen and Piispa (2020).

Pozzebon, Cunha, and Coelho (2016) discuss the processes underlying the decrease in civic participation through social representation framework theory. They argue that for governments to improve citizens' eParticipation, the social representational processes characterising their web-based initiatives should be given special consideration. The results imply, for instance, that applying digital participatory budgeting (DPB) to enable participation for people who had not previously participated would encourage civic involvement, promote discussion on public works, and permit citizens to engage in policy making, such as in legislation processes.

Kahne, Lee, and Feezell (2013) discuss the possibility of online activity serving as a gateway to participation in civic and political life. The threshold to engage in volunteering, community problem-solving, protest activities, and other forms of political involvement could be lowered by participating in online activities of a similar nature. According to their study, politics-driven participation is associated with an increase in online political action and expression, while online participation that is driven by interests is related to political action, expression, and campaign participation. Participation that is interest-driven is seen as a key predictor for enhanced civic engagement. However online platforms do not alone create, increase, or sustain societal participation.

2.4. Obstacles for participation

There are obstacles for societal participation in both offline and online worlds. Checkoway (2011) argues that participation is not even between the youths, implying power-relations among youths, notion which is strengthened by the study by Meriläinen and Piispa (2020). Additionally, Cahill and Dadvand (2018) elaborate that discourses that enable taking up positions are not accessed equally by everyone and that power relations exist also between young people. Along the same lines, Ten Brummelaar et al. (2018) discuss the notion of 'meaningful' participation in decision-making, arguing that the youths have limitations in their participation possibilities.

Similarly, according to the study by af Ursin and Haanpää (2012), young people consider their possibilities to participate as non-excitant. The authors wonder if young voices meet a listening ear and where are the ways how to activate young people. Yet, as many studies have shown young people already participate, but there are problems in youth participation. For instance, Meriläinen, Heiskanen, and Viljanen et al. (2020) argue that the role of young people in legislative processes appears to be inadequate although several laws guarantee their participation in society. Similarly, Kidman and

O'Malley (2018) found in their research that participation of young people in society, even at political levels, can be disregarded if young people's agendas do not fit into the existing political agendas. Bessant (2004) asked whose voices are heard in (youth) participation and raises the question of obstacles when young people try to participate socially, economically, and politically. Bessant ponders about the requirements of youth participation and whether youth participation is at odds with the rhetoric of democratic participation. Also, Nichols (2017) studied youth experiences and exclusion/inclusion in the justice system and pointed to the need to have a youth-based approach to studying various forms of participation. Some young people may participate through traditional ways, but also through ways which are not recognised by adults or in larger society, or even create newer ways (Bowman 2020). Also, as Head (2011) argues for the benefits of the various forms of youth participation, which may be at the individual or the wider social levels.

Perhaps one aspect to increase meaningful possibilities would be to create eParticipation tools to enable digital participation for different kinds of youths. Although eParticipation tools and means may, in fact, create possibilities to participate, these alone cannot guarantee participation. Regarding the designing process of eParticipation tools, Toots (2019) argues that the context where digital participatory tools are used and created enables both possibilities and failures for eParticipation. Toots (2019) elaborates that the eParticipation platforms aims are complicated as the different user groups have different expectations and objectives in the platforms and services.

Thus, when designing eParticipation services for youth, the following aspects must be considered: accessibility, usability, closeness, and the sense of purpose, as well as the feedback process of the usage (Meriläinen, Pietilä, and Varsaluoma 2018). This would perhaps increase the inclusiveness in eParticipation. Similarly, Scherer, Wimmer, and Schepers (2012) argue that terms such as the usage of regional languages and marketing at the regional level must be considered. The authors also mention that the eParticipation platform must be integrated with the political processes. Additionally, the local level implications of non-local matters should be elaborated to enhance the experienced relevance and thus be brought closer to citizens. The information presented needs to be understandable and expressed in an interesting manner, and the users must be able to receive feedback on their engagement (Scherer, Wimmer, and Schepers 2012).

3. Studying the user needs of youths

The study is a part of a multidisciplinary project ALLYOUTH (http://www.allyouthstn.fi/en/) that aims to explore the participation and engagement possibilities and obstacles of youths in Finland in societal matters. The results of this study are used as a basis for developing an eParticipation prototype. In this study, we focus especially on the needs of youths with different kinds of tendencies for societal participation for eParticipation services. Thus, the following research questions were formulated: (1) What are the youth's needs for eParticipation services? and (2) How to consider these needs in eParticipation platform/service design?

To answer these research questions and to provide a deep understanding of the youths' user needs regarding eParticipation services, a study applying a qualitative research approach incorporating semi-structured small group interviews in workshop settings was designed. In comparison to surveys, interviews often enable deeper exploration of the matter under study through providing the possibility for the interviewer to ask for specifications and further elaborations from the participants (Lazar, Feng, and Hochheiser 2010). Lazar, Feng, and Hochheiser (2010) elaborate on the different ways to apply interviews in HCI research. This study has characteristics of an initial exploration as it aims to shape the understanding of the youth's activities and wishes in regard to societal and political participation in digital services. Moreover, the study can be also regarded as requirements gathering, as it explores the various user needs that the youths have for eParticipation (Lazar, Feng, and Hochheiser 2010).

Although there are various important questions affiliated with the relationship of participating in societal processes and demographic variables such as age, ethnicity, and gender, this study focuses on the user needs of youths with various backgrounds in societal participation. Addressing the reasons and mechanisms that lead to more or less active participation in societal processes are outside of the scope of this study, albeit they are important factors in creating more inclusive decision-making processes.

3.1. Participants and study setting

The data was acquired between February and April in 2019. Data acquisition took place in altogether six workshops in southern Finland. Scenarios of youth participation were used as stimulus material. Semi-structured group interviews, recording of group discussions, and background questionnaire forms inquiring age,

education level, and profession, were used for data gathering.

3.1.1. Participants and recruitment

Altogether, 74 young people of the ages between 16 and 27 participated in 6 distinct workshops. Each workshop had from 4 to 25 participants, divided into groups from 3–5 people (20 groups in total). Thirty-six of the respondents identified themselves as males, 29 as females and 9 participants as other or did not want to disclose their gender. The sampling can be described to be between random and convenience sampling as the workshops were executed around southern Finland (less than 200 km away from Tampere) in settings in which youths were naturally present. Details of the workshop participants are described in Table 1. Groups that are included in the table as 'Undisclosed' are other municipality level settings that have participants that are not in education, employment, or training (NEET). These groups are not expressed in a more specific manner to ensure the anonymity of the participants.

The aim was to enable the participation of youths with various backgrounds. We approached this by recruiting the workshop groups from such settings that have young people with varying experiences in societal participation and by including groups from different locations. To accomplish this aim, we chose to recruit groups from preparatory vocational education ($n = 10$), NGO's and third sector settings ($n = 14$), and general upper secondary education settings ($n = 37$). Groups were recruited by contacting the personnel of each setting. Presumably, in these settings, the participants vary in their experience in societal participation.

Table 1. Details of the workshop participants.

Workshop ID	No of participants	No of groups	Setting type/ context	Age mean	Age range
1	10	3	Preparatory vocational education group	16.7	16–19
2	14	3	NGO/third sector workshop (Partially NEET)	23.1	18–27
3	3	1	Undisclosed for privacy reasons (participants NEET)	22.0	19–25
4	10	3	Undisclosed for privacy reasons (participants NEET)	21.8	20–27
5	19	5	General upper secondary education	16.3	16–17
6	18	5	General upper secondary education	17.4	16–18

For instance, students in general upper secondary education are considered to be more likely to participate in societal processes than students in vocational education (Myllyniemi 2014; Myllyniemi and Pekkarinen 2019; van de Werfhorst 2017). Also, students from vocational schools do not regard traditional ways of participating as interesting, but do participate through, for example, social media (Meriläinen and Piispa 2020). Additionally, NEETs ($n = 13$) (those not in education, employment, or training) are considered to have less political confidence and are less satisfied with democracy than their employed peers (Bay and Blekesaune 2002). Furthermore, Carle (2000) asserts that interest towards politics is lower among the unemployed than among the employed, as is participation in political activities such as signing petitions, participating in boycotts, wearing badges, or voting in elections. NEET groups are not expressed with more details to ensure the anonymity of the participants. Considering these assumptions, we aimed to enable a sample that varies abundantly in societal participation experiences, and in which also the youths that usually do not participate in societal activities, are represented.

The groups were recruited by directly contacting the personnel that facilitate the groups. For preparatory vocational education, three vocational upper secondary education institutions with preparatory vocational education that were located less than 200 kms away from Tampere were contacted. In one, a teacher was able to fit the research in their group schedule. For NGO's and third sector settings, seven organisations that were located less than 200 km away from Tampere and known to facilitate rehabilitative activities and group activities in which NEET's participate in, were contacted. Three of them were able to fit the study into their group activity schedules. Finally, teachers in five different general upper secondary schools were contacted, out of which two were able to fit the participation in the study in their group schedules.

3.1.2. Workshop process

The workshops consisted of introduction, scenario working, background questionnaire, and debrief. Scenarios are explained in the next section. Introduction included basic information about the study and goals for the workshop. During introduction, participants' consent was also inquired. Each scenario was read out loud and displayed on a screen. Scenario working involved discussing scenarios in small groups. At the end of the workshop, participants filled in the background questionnaire. Each participant was rewarded with a movie ticket. Each group had a researcher facilitating the discussion and the discussions were recorded.

Facilitators supported the semi-structured group discussions by asking participants to (a) share their thoughts about the scenario, (b) if it were realistic, (c) would they use the service and (d) what could be changed to make it more interesting. Each workshop lasted 1.5–2 h.

3.2. Data gathering methods and scenarios

Scenarios describing eParticipation use cases were used to ignite conversation. The scenarios aimed to represent a wide array of interaction features in eParticipation systems (Sæbø, Rose, and Skiftenes Flak 2008; Sanford and Rose 2007). The scenarios were produced with a group of scholars from various fields, including HCI, human rights, youth studies, power relationships, and public law.

Scenario 1 is as follows

> 'Jenni, together with 20 other people, has been chosen by random sampling to take part in civic council regarding updating the climate change act. Jenni receives an invitation to her email and notification with SMS. The email includes a web link that allows her to log in to the new societal discussion service. Jenni has one week to accept the invitation. She can use Google or Facebook identifiers or her email to log-in. Discussion team has been readily created in the service. The group has already materials, such as parts of the climate change act, proposed updates to the act and questions related to them created by governmental officials. Team members can add comments, response to others' comments and use chat to discuss the presented questions and materials. Reactions, such as 'likes', can be added to comments. Participants can also view materials, such as life cycle impact assessments, created by experts and interest groups. The discussion aims for consensus between the participants. After two weeks, the participants formulate a statement for the officials. Voting can be used for the final outcome.

Rest of the scenarios were presented in a similar narrative manner as Scenario 1 including a user and a description of the use case and central features of the hypothesised service. Key features that the rest of the scenarios included were discussions, voting, tagging of municipal actors, participation badges, materials section with commenting tools, digital council creation, map-based tools, activity summarising and visualising tools, and reminders.

After introducing each scenario, the use cases and features presented were discussed in small groups. Each discussion was facilitated by a researcher. Facilitation included posing questions such as (1) 'What kind of thoughts do you have from this story?' (2) 'Was there anything unclear or unbelievable?' (3) 'What would you change in the presented digital service? Why?' (4) 'Could you see yourself in this situation? If not, why?' (5) 'What would make you interested in using this kind of service? What should it include? Why?'. As a semi-structured interview was selected as the data acquisition method, the facilitators had the freedom to further explore interesting phenomena that emerged in the discussions and to present specifying questions.

3.3. Analysis

Three group discussion recordings, including discussions of altogether 16 individual participants, were discarded due to technical issues. Transcribed interviews from 17 groups ($n = 58$) were included in the qualitative analysis. The analysis can be described to follow grounded theory (Glaser and Strauss 1967) as the categorisation was based on the data. The category formation was more specifically conducted through thematic content analysis (Braun and Clarke 2006) by one author. The analysis was divided into five phases and followed a similar structure as analysis presented by Burnard (1991). Phases of the analysis were (1) Data overview formation through reading of the transcripts, (2) Annotating the transcripts systematically, (3) Applying open coding to form initial categories (Malterud 2012), (4) Iterating the identified categories & re-reading transcripts, and (5) Assessing the categories, setting them in a dialogue with previous works and theory. Main question guiding the whole analysis process was 'What are the youth's needs for eParticipation?'. Topics that emerged from the data were coded and grouped into similar themes using NVivo software. The resulting themes were further divided into four main categories regarding user needs.

4. Results

4.1. Youth's needs for a digital service enabling societal participation

Ten user needs were brought up in at least five discussion groups. These ten needs were grouped into four categories (1) Trust and safety, (2) Motivation to participate, (3) Integration to governmental processes, and (4) Efficient and effective use. Other needs are discussed separately.

Needs related to trust and safety. Nearly all groups brought up topics related to the theme safe environment (mentioned in 14/17 groups). Participants were worried about provocative discussions ('trolling') and saw a need for moderators and rules. Anonymity (10) was seen as

an enabler for open discussions, but also as a risk to attract trolls. It was suggested that users would have to register with their real names, but could use nicknames in discussions, so that administrators would still know the users.

For the first time use experience, it would be beneficial if the service were already familiar from school, other official channels, or advertisements in social media. This would evoke trust towards the service (6). For instance, scenario 1, in which participants were invited via email, was considered suspicious by some youths. 'I am quite sceptical with those … when you need to register […] and you haven't heard about it before, then hardly.' commented one participant in an NGO setting.

Needs related to motivation to participate. A personally interesting topic (10) was seen as one of the main motivators to participate. One group with NEET youths contemplated that having participants in discussions who are not interested in the topic could still provide new viewpoints. One male participant in the same group asserted that: ' … if I do not know and I am not interested, then I won't even try to have an influence, because it seems wrong to try to affect something that […] I don't know anything about'. Competition, gift-cards, or monetary rewards (6) were considered motivating especially in discussions created by officials. However, if the discussion was created by citizens, then the rewarding system was considered unworkable, and the reward would be in advancing the societal goal. Finally, there should be an adequate number of users (6) using the service in order to make it 'credible'.

Needs related to integration to governmental processes. Having a real impact (9) was seen as crucial. As one male respondent from high school commented: 'The first thing that makes such service attractive is how impactful it is.' One way to support these expectations would be to highlight successful and impactful discussions from before. Finally, government or local government officials should be actively participating in discussions (5), as this was seen to provide confidence that the discussions could have an impact. However, one of the upper secondary education group were worried if the officials would have the time to participate:

> If it would be concretely described where the (statement) would go next, and if there was some policymaker sometimes to discuss the topic with them, it would increase the motivation quite a lot. But I do not know if they have the time, those decision-makers to be there.

Needs related to efficient and effective use. Useful search features (8) that were mentioned included filtering existing discussion groups based on tags and setting favourite topics or tags to receive notifications for new discussion groups. Also, a possibility to volunteer for upcoming discussions before they start was mentioned. The respondents were worried that they do not have enough knowledge to take part in discussions. To support the discussion, there should be material available for the participants (5) to read or watch before the discussions.

Other themes, for example, gamification. The idea of gamifying a service for societal discussions was met with scepticism and 9 groups were worried that adding gamified elements might take the users' focus out from the main purpose of the service. For instance, one female NEET participant commented: ' … there is a possibility to participate without influencing, so that you hang around, add some 'yeah' comments, and then gain points. But then you do not really provide any content for it'. Furthermore, 9 groups thought that visible badges and titles might create inequality. A comment from a female NEET respondent: 'I wouldn't dare to make a comment when there are only those 'master-conversationalists' and I am here for the first time.' In five groups, the statistics and information about personal merits were thought to be interesting and might be a motivating addition to the main features.

5. Virtual Council prototype

Results from the workshops were utilised in the design of an eParticipation platform called Virtual Council. The research team discussed the feedback from the workshops and updated the list of requirements, which was used in the design of the first prototype. Virtual Council aims to be a low threshold eParticipation service that enables participating in various societal and political matters. Virtual Council can be used via two approaches for running the councils: (a) council is created by an official, who also invites the participants or (b) a council is suggested by a citizen and supported by other citizens or officials. The first approach was the focus of the current prototype.

The following simplified use case describes how an official could use Virtual Council: (1) an official creates a new council and sets parameters such as council name and starting and ending dates. He then uploads the materials (documents and web links) into the council documents page. (2) The official sends an invitation email to a local schoolteacher, whose students have agreed to participate. The goal of a council is to write a statement based on the discussions on the given topics during a specified time frame, for example, one week. Students register to the Virtual Council service and

join the council. One of the students agrees to act as a chairperson and is responsible for writing the final statement based on the discussions. (3) Participants familiarise themselves with the provided materials and then proceed to the discussions in the chat. The teacher and the official also participate in the discussion. When the deadline for the council draws near, each member is asked to provide their own, pseudonymised answer to the given discussion topics for the final statement. (4) The chairperson summarises the individual responses for the final statement. Other participants can agree or disagree and comment on the statement. After the statement is accepted, the official rewards participants with small gift cards. He then exports the statement for his further work. (5) Later, the official sends a feedback message to the council members to inform them on what has happened with their statement and where it has proceeded.

Figure 1 illustrates the front page of the current Virtual Council's prototype, displaying search features and a selection of the currently available councils for the user. The prototype provides the basic user profile page and council pages. On the council page, participants can view the council description on the main tab, while other tabs include chat (Figure 2), documents and final statement.

Next, the implemented design solutions that aim to support the user needs are presented. A safe environment and anonymity were supported by allowing the use of nicknames in chat and by pseudonymization of the participants' personal answers for the final statement. The chat includes emoticons for agreeing/disagreeing, but also for complimenting on a well-written comment. Moderation will allow warnings for misbehaviour in chat and ultimately banning a user. Trust towards the service could also be increased by providing high-quality support materials for the council and by using an official language and look in the service, including example, official logo, images of the youth and clear design. The service should also support different types of 3rd party sources, such as text and video files, and links to external websites, to support discussions. The proposed design solutions for supporting a safe environment, anonymity, and trust towards the service, could also enhance the inclusiveness. Accessibility, as one aspect of an inclusive service (Meriläinen, Pietilä, and Varsaluoma 2018), is ensured by following the EU Directive (2016/2102) on the accessibility of the websites and the W3 Web accessibility guidelines. Further design implications that are not yet implemented are discussed in the following section.

6. Discussion

In this chapter, the results from the workshops are set in a dialogue with the related work and theories. Further design implications are proposed to address the identified user needs.

6.1. User needs and previous studies

The user needs findings provided by this study are analogous with the previous research in various dimensions. Considering the obstacles for participation listed by Pietilä, Varsaluoma, and Väänänen (2019), many

Figure 1. The front page of the Virtual Council prototype. Search options, when implemented, will help users to filter available councils based on their popularity, newness, topic, description, or keywords.

Figure 2. The chat view of the Virtual Council prototype. Users can reply to others' and edit their own comments. Users can also use reaction buttons to agree/disagree or to compliment for a well written comment.

overlapping areas were found in this study. For instance, the lack of information can be seen as the need for providing proper and extensive materials supporting discussion to enable informed opinion formation. Moreover, privacy-related issues are affiliated with the possibility to participate in the discussions anonymously thus retaining the privacy of the users. Additionally, the obstacle of inadequate effect when participating, is listed in the found needs as having an actual effect. Lack of interest, also mentioned by Pietilä, Varsaluoma, and Väänänen (2019) as an obstacle for participation, manifests in the identified user needs as a need for interesting topics for discussions in the Virtual Council. Obstacles related to the fear of conflict can be linked with the need for a safe environment.

Our findings regarding youths' needs for eParticipation services are similar to the challenges related to digital participation identified by Meriläinen, Pietilä, and Varsaluoma (2018). Both highlight the importance of 'having an impact', as some youths think that their thoughts do not matter. This aligns with the findings by Meriläinen and Piispa (2020) on vocational students, which emphasises the importance of the effect of participation in relation to the will to participate as well as the importance for the young people of having need to be heard in the society and in decision making. Based on their study, Meriläinen and Piispa argue that if young people do not see themselves as being heard and included in the society, at worse this makes them become passive.

Also, officials should provide participants information on the impact of their collaboration and illustrate if and when the young participants had an actual effect and in what, so not to follow the findings of Kidman and O'malley (2018); Meriläinen and Piispa (2020) who argue that in society, participation faces obstacles and may be disregarded because some young people's participation do not fit into the current political agendas. eParticipation platform that is designed based on user needs can at best break down obstacles in youth participation in society. As Runciman (2017, 4) states, 'there has been almost no discussion of how the digital revolution and the spread of information technology may be reshaping the ways in which power and legitimacy are to be understood'. At best this further creates inclusivity, which can be strengthened by further collaborating with young people from various backgrounds by using eParticipation services and offline gatherings.

Similar to our findings, Scherer, Wimmer, and Schepers (2012) elaborate that the eParticipation services need regional marketing, which is directly linked to

the awareness of the service. Additionally, it is stated that the eParticipation platforms need to be extensively integrated with the political processes. This is instrumental in relation to the need of having a real impact. There is also contemplation on the requirement of the users receiving feedback on their participation from officials. This relates to the needs for rewards and official's engagement allowing actual interaction between users and decision makers. It is also said that the information presented in eParticipation systems must be understandable and expressed in an interesting manner which can be seen to be closely related to the needs for interesting topics, and materials that can support the discussions (Scherer, Wimmer, and Schepers 2012). Moreover, the results imply that the decision makers or the governing organisations should invest more to interacting with the youths and eParticipation service incorporating such interaction could motivate the youths to participate more.

Additionally, the results relate tangibly to the definition of participation by Checkoway (2011), which includes actual effect as an outcome as one of its key components. The results of this study indicate that having an actual effect in the matters that the platform is used to contemplate on, is a constitutive user need among youths in the context of eParticipation services.

Furthermore, a cross-cutting social dimension can be implicitly identified in the interview results, as societal participation often concerns interacting with others. Instead of supporting the participation of individuals through eParticipation services, more emphasis should be given to how the young people's existing social networks could complement digital societal participation (Campbell 2013). Additionally, the needs connect to the ambiguity of societal and political participation identified by for example, Weiss (2020) as the topics need to be personally interesting. Not all the activities that the youths experience as meaningful and that may have societal implications, are regarded as societal participation (Meriläinen and Piispa 2020).

6.2. Design solutions to enhance inclusivity in eParticipation platforms

There are various design solutions the research team considers implementing to the Virtual Council as the design process continues. The design implications are discussed here as they might support the identified user needs (see Section 4.1.) and inclusivity of similar eParticipation services. First, finding the personally interesting topics could be supported with easy-to-use search features, such as automatic recommendations based on chosen keywords for council topics or previously joined councils. Users should be able to receive notifications, for example, via email, when interesting councils are about to start. Having a real impact is dependent especially on the officials who utilise the final statement, and how well the platform integrates to societal and/or decision-making processes. Since the process for making an impact can take a long time, the system should send notifications to the officials to prompt them to provide feedback for the council. Council members should also be notified when the feedback is given. Motivational examples of councils that had an impact could be highlighted in the front page. Finally, there should be a clearly stated purpose and goal for the council, also explaining the impact it aims to have.

Possible rewards could include movie tickets, gift cards or small amounts of money, but also recognitions such as an official diploma for participation can be important for youth to include in their CV. In addition, subtle gamification elements providing virtual rewards, such as activity points, levels, and user statistics (e.g. most praised comments, personal activity, and activity on timeline per council) could act as minor rewards and motivate continuous usage. An adequate number of users could be achieved by advertising the upcoming councils among the registered users. However, with a new service without a large user base, one must invite participants for example, via social media, schools, youth services and youth councils. Integrating the use of the service as part of existing curriculum in courses in various subjects in schools could be a way to make it familiar for youth. With a large number of users, there could be several discussion groups with the same topic in order to keep the online discussions less chaotic. In the end, each group could share their outcomes with other groups and choose or vote for the best solution. Finally, the active participation of the officials could be supported with an interface that is easy to learn and use, and suitable for mobile devices. Examples of features that might motivate officials' participation include (1) notifications of active discussions in the council or of direct questions to the officials, (2) the possibility to easily invite external users, such as colleagues, to the discussions, and (3) shared examples of successful councils.

Interestingly, Virtual Council has at least to a degree succeeded in responding to the user needs of the various youths (Pietilä et al. 2021). In a week-long use period of Virtual Council, the participant's societal participation self-efficacy was increased especially among the youths that were less experienced in societal participation. Additionally, the threshold to societal participation in

various forms was decreased after the one week use period (Pietilä et al. 2021).

As this study was intentionally executed also in such surroundings which include the youths that have had less possibilities to acquire experiences in societal participation, these results can be applied by designers to enable a more inclusive design of eParticipation platforms. As the structures that aim to enable societal participation encourage citizens to participate (Newton and Giebler 2008), the structures should be designed with regard to the needs of those who the society wants to participate that is, all youths.

7. Limitations and future work

Workshop transcripts were analysed only by one researcher, which could affect the validity of the results. Furthermore, in addition to socio-demographic determinants, societal and political participation are considered to be dependent on the context also (Kitanova 2020) and thus the results of similar studies may vary between countries. In future, we continue the iterative development process of Virtual Council in collaboration with the youth. The proposed solutions for the user needs described in this study will be evaluated accordingly in prototype tests. Referring to recent research (Meriläinen, Heiskanen, and Viljanen 2020), youth participation in online and offline environments is at worst disregarded by the officials and legislators due to power relations. Thus, in the future, it would be interesting to study if better youth-centric design and youth inclusivity in design could break down the obstacles for participation and in having an impact.

8. Conclusion

Young people's needs for digital service enabling societal participation play a crucial role in designing such services. By involving youths with a wide spectrum of different backgrounds we gained an understanding of their needs. In this paper, we presented the identified user needs and set the design solutions in the Virtual Council prototype in a dialogue with them. The results can contribute to future research and the design solutions to enhance the inclusiveness of digital eParticipation services. Through advancing inclusiveness in digital democracy services and eParticipation platforms, it may be possible to allow society to develop more deliberative and equally accessible democratic processes.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by Strategic Research Council of Finland: [Grant Number ALL-YOUTH grant (Decision no. 312693 and 326605)].

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PUBLICATION III

EParticipation for Supporting Societal Participation Self-efficacy and Lowering the Thresholds of Societal Participation: Case Virtual Council

Pietilä, I., Lähde, M., Varsaluoma, J., & Väänänen, K.

CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI EA '22). Association for Computing Machinery, New York, NY, USA, Article 31, 1–8.

eParticipation for Supporting Societal Participation Self-efficacy and Lowering the Thresholds of Societal Participation: Case Virtual Council

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ABSTRACT

While eParticipation platforms have been developed extensively, there is a lack of insight into how they support societal participation. People's beliefs in their capabilities are a relevant component in human action, also affecting the motivation to participate. In this paper, we report the results of a study on the possibilities of an eParticipation platform to a) enhance the users' self-efficacy in the context of societal participation, and b) lower the threshold of societal participation. Altogether, 34 young people from various backgrounds participated in Virtual Council field tests to collaborate on the Climate Change Act in Finland. The results suggest that eParticipation platforms can enhance the societal participation self-efficacy of youths that initially have less experience participating in societal issues. Furthermore, the threshold of participation can be lowered after using the eParticipation platform. The paper adds to the growing discussion on connections between youths use of digital services and societal participation.

CCS CONCEPTS

• **Field studies**; • **Software prototyping**; • **Computing in government**;

KEYWORDS

eParticipation, societal participation, self-efficacy, Virtual Council

ACM Reference Format:
Iikka Pietilä*, Miia Lähde, Jari Varsaluoma, and Kaisa Väänänen. 2022. eParticipation for Supporting Societal Participation Self-efficacy and Lowering the Thresholds of Societal Participation: Case Virtual Council. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI '22 Extended Abstracts), April 29–May 05, 2022, New Orleans, LA, USA.* ACM, New York, NY, USA, 8 pages. https://doi.org/10.1145/3491101.3503578

CHI '22 Extended Abstracts, April 29–May 05, 2022, New Orleans, LA, USA

ACM ISBN 978-1-4503-9156-6/22/04.
https://doi.org/10.1145/3491101.3503578

1 INTRODUCTION

During the last two decades, European youth policy has strongly emphasised the importance of improving young people's possibilities and resources for engagement in political and social spheres. International youth policy documents such as the White Paper on Youth (European Commission, 2001) and the EU Youth Strategy have highlighted the need to create opportunities for debate between public institutions and young people and make effective use of information and communication technologies to broaden and deepen participation (Youth Wiki, 2020).

The concept of societal participation can refer to the activity of a single person or group taking part in a plethora of societal processes that can include, but are not limited to, voting, decision-making, and discussing politics (Pietilä et al., 2019). Harris et al. (2010) assert that societal participation can also include belonging to a political party and participating in party activities. The concept of societal participation is closely affiliated with civic engagement and political participation. Adler and Goggin (2005) describe civic engagement to include activities such as community services, collective actions, or political involvement. These activities can manifest, for instance, as donating blood or mentoring youths, voting, or contributing to political party activities. Moreover, as Macedo and Alex-Assensoh (2005, p. 6) argue, civic engagement can be defined as "any activity, individual or collective devoted to influencing the collective life of polity". Furthermore, according to Weber et al. (2003), political participation beyond voting can refer to activities such as signing petitions, attending public, town, or school meetings, contacting government representatives, attending political rallies, serving in organisations or clubs, and taking part in political discussions online.

Societal participation and interaction between citizens and officials are increasingly taking place online (Xenos & Moy, 2007; Auxer, 2020; Van Kessel et al., 2020), and online participation is especially preferred by youths (Xenos & Moy, 2007; Weber et al., 2003; Omotayo & Folorunso, 2020). In the international policy context of youth participation, eParticipation is understood as measures aiming to broaden youth participation through the use of information and communication technologies and social media (Youth Wiki, 2020). Furthermore, as an even broader phenomena, the concept of digital participation refers to a plethora of institutionally and

traditionally recognised activities, which can often fall under eParticipation, and less institution-centric and traditional ones, such as using social media or discussion forums to affect societal matters (Pietilä et al., 2019).

1.1 Barriers and unequal possibilities for participation

Not all young people have equal possibilities for societal participation (Checkoway, 2011; Cahill, 2018; Auxer, 2020). Pietilä et al. (2019) assert that some key obstacles for youth societal participation, as reported by the youths themselves, include lack of interest, lack of information, fear of conflicts and being stigmatised. Hibbing and Theiss-Morse (2002) elaborate that the inefficient and conflict-ridden impressions of politics and democratic processes cause disengagement from societal participation. Additionally, according to Ten Brummelaar (2018), the youths are limited in their possibilities to participate meaningfully.

Enabling societal participation online may mitigate some of the differences in and quantities of participation between youths with different backgrounds (Flanagan & Levine, 2010), but eParticipation services should not be considered as silver bullets that enable equal participation for all. In addition to reproducing similar problems related to traditional ways of participation, there may also be new problems. Identified challenges in digital participation include various divides, such as males and middle-class youths benefiting from better internet connections in comparison to females and working-class youths (Livingstone & Helsper, 2007).

1.2 Self-efficacy in societal participation

Self-efficacy refers to the expectations or beliefs that people have about their abilities. According to Albert Bandura's widely used theory, perceived self-efficacy refers to an individual's beliefs in his/her "capabilities to organise and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3); more simply, it is "a judgment of capability to execute given types of performances" (2006, p. 309). Beliefs concerning one's capabilities are a central guiding factor of human behaviour, which influences the individual's thinking patterns, motivations, affects and actions. Through its direct and indirect effects, perceived self-efficacy contributes to, for example, people's aspirations, how they approach new tasks, goal commitment and resilience (Bandura, 1995; 2006). Self-efficacy relies on mastery experiences, vicarious learning (learning from social models), verbal persuasion and physiological and affective states at the time of the behavioural opportunity (Bandura, 1995, pp. 3–5; Williams & Rhodes, 2016).

As self-beliefs are not a unitary system but specific to different domains of human actions, their measurement should be tied up with a particular situation and task (Bandura, 2006; see also Latikka et al., 2019). In societal participation, efficacy beliefs have been regarded both as an important predictor of participation and of its positive outcome. A high level of efficacy among citizens is understood as desirable for democratic stability (see European Social Survey, 2016; Solhaug, 2016). Even before Bandura's theory on self-efficacy, the concept of political efficacy has been discussed in political science. For example, Campbell et al. (1954, p. 187) have defined political efficacy as the "feeling that political and social change is possible and that the individual citizen can play a part in bringing about this change". Almond and Verba's (1963) term "internal political efficacy" assert that an individual's engagement in political action requires not only knowledge but also other capabilities such as believing in one's abilities to act and exert influence in various fields (Solhaug, 2006). In this paper, we use the concept of societal participation self-efficacy to refer to the beliefs and expectations of one's own performance and capabilities in relation to societal participation.

2 STUDYING VIRTUAL COUNCIL

In this study, we are interested in how a digital service can support young people's societal participation self-efficacy and lower the thresholds of societal participation. To study the relationships of using an eParticipation platform, societal participation–related self-efficacy, and thresholds to participate, two research questions were formulated: **RQ1**: How is the use of Virtual Council related to societal participation self-efficacy? And **RQ2**: Does the use of Virtual Council lower the threshold of societal participation? These research questions are answered in the Results and are further discussed and juxtaposed with previous studies in the Discussion.

2.1 Virtual Council – a platform and process for youths' eParticipation

Virtual Council is an eParticipation platform that aims to foster the participation of young people in societal discussions to influence policies that (may) affect them. Virtual Council can be employed at different levels of governance, such as at the municipal or state level, in order to engage young people in planning or decision-making processes. A functional prototype of Virtual Council has been developed as part of a multidisciplinary research project All-Youth. Various youth groups and individual young people have been involved in the different phases of its design and development processes (Pietilä et al., 2021).

Virtual Council research encompasses various roles. By "user", we refer to anyone who uses the service, and by "participant", we refer to the individuals who participated in this study. "Official" refers to people who work for the government or a municipal or governmental organisation. A "chairperson" is a user that is not an official but has a special role in a council; they are a volunteer who is responsible for creating a summary that functions as a final statement of that particular council. In Virtual Council it is possible to create digital councils, in which the creator can invite participants. Each council has sections for real-time textual chat, supplementary materials, and final statement, in which the council's viewpoints are summarised. The chat includes features such as reactions to individual messages ("Agree", "Disagree", and "Well argued") and allows a chance to reply to a message, thus starting a sub thread. The materials section enables users to upload external documents. The final statement feature enables the council to form a statement that reflects the central opinions and viewpoints that manifested during the discussions through a questionnaire.

2.2 Using Virtual Council to hear the youths concerning Climate Change Act renewal

The use case of Virtual Council for this study was created in collaboration with the Ministry of the Environment of Finland. The Climate Change Act consists of matters such as goals for emission reductions and the planning system for policies concerning climate that includes, e.g., various long-term plans. In this use case, the participants were asked to engage in a consultative process concerning the renewal of the Climate Change Act and to produce the final statement addressing the emerging views. Although the officials working for the Ministry were partners in this study and provided the materials to support the discussions, the councils' creation and the material uploads were conducted by the researchers, as the service is still under development and does not yet have the features that enable the officials to independently run the councils.

2.3 Methods and study setting

The data for this study was acquired through three different online questionnaire sets and by conducting a semi-structured interview on eight individual participants. Data acquisition was executed in a series of multiple separate digital test councils in which the participants used the Virtual Council platform for a week-long working period. Each council included 5–10 participants. Altogether, five councils were carried out in five different settings in Central and Southern Finland. A few days after each council had finished, one or two participants were recruited in an interview (8 in total). The interview included questions concerning general thoughts on participation, overall experiences regarding Virtual Council, thoughts on the functionalities and contents of discussions, materials section and final statement, and participant activity.

For the operationalisation of societal participation–related self-efficacy, a set of questions utilising 1–7 Likert scale assertions were prepared for both, with 1 being "Completely disagree" and 7 being "Completely agree". The section was based on the work of Pietilä et al. (2019) and Pajares et al. (2006). Societal participation self-efficacy was inquired before and after the use period of Virtual Council and thus represent a repeated measures setting style.

To measure an individual's threshold for societal participation, another set of questions was prepared. The items in the section are based on the European Social Survey (2018) and are edited to fit the needs of this study. Each item represents an activity that is affiliated with societal participation (See Figure 2). Participants were instructed to appraise each of the items categorically as "I have not and I could not imagine myself doing so", "I have not, but I could imagine myself doing so", "Yes, but I could not imagine myself doing so anymore", "Yes, and I could imagine myself doing so in the future", "I don't know / I don't want to answer / Does not apply to me". These data were collected once before and once after the one week use period of Virtual Council and, thus, also represents a repeated measure setting style. To reduce dimensions and to increase interpretability, the data from these two measurements (before and after) were aggregated to three categories: "Threshold lowered", "Threshold remained the same", and "Threshold increased".

2.4 Study process & Participants

The study is based on a use case of Virtual Council that was carried out with five different groups, each stretching over a one-week period. The study process included three phases: Orientation & Initialisation, Use period and Finalisation. The first phase, Orientation & Initialisation, was organised as a face-to-face workshop-like meeting with the group. During this meeting, the group was given information concerning the project. Also, the participants' written consents, demographics and first round of repeated measures data were acquired. Use period consisted of three sessions. During the first and second use sessions, the participants were asked to familiarise themselves with the supporting materials, discuss questions addressing emission reduction and participation in legislation, and to edit the old act or create a completely new act. For the third use session, the participants were instructed to answer the questions for the final statement. The concluding summary of the final statement was assigned to the chairperson. The third phase, Finalisation, included filling out the end questionnaire and the repeated measures questionnaires and interviewing eight of the participants over Skype. No separate face-to-face meeting was arranged for the third phase, and the participants completed the questionnaires independently. The participants were acknowledged for their participation with a free movie ticket and a diploma of participation for the Climate Change Act renewal.

Altogether, 34 young people participated in the week-long use periods in Virtual Council. Data were usable from 25 of those participants, who were between 15 and 32 years of age. Seven (28%) participants were over 15 but under 18 years of age. Eight (32%) participants were 18–23 years old. Seven (28%) were between 24 and 29, and two (8%) had turned 32. The median age of the participants was 21 years. Fourteen (56%) participants identified as female and nine participants (38%) as male. Two participants identified as "other" or did not want to answer this question. The participants were recruited from various settings such as rehabilitative workshop activities (6), volunteering youth action team (4), inclusive rehabilitative activities team (13), vocational special education group (7), and bachelor's level students' group (4). By this we aimed to include youths with various backgrounds (See e.g., Pietilä et al., 2021).

2.5 Analysis

SPSS was used for analysis and infographics. To compare differences between the before and after measurements, the non-parametric equivalent of the t-test (related-samples Wilcoxon signed-rank test) is used where applicable. Non-parametric tests were chosen due to small sampling sizes. For statistical tests, .05 was selected as the alpha threshold value and Bonferroni correction is used for repeated tests. The number of participants in each statistical test may differ from the number of participants in the whole group due to inadequately completed questionnaires precluding uniform formation of sum variables. Sum variable Societal participation self-efficacy was formed from seven items with an inner consistency of $a = .971$.

In the qualitative analysis of the interview data, the methodological approach of grounded theory was applied as the categorisation was based on the aspects that were identified in the data (Glasser

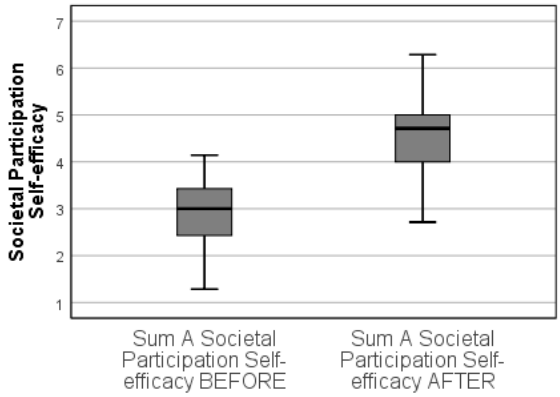

Figure 1: Before and after measurements of the variable Societal Participation Self-efficacy for the participants that were initially below the median value (n = 9).

& Strauss, 1967). The notes from the eight personal interviews were transcribed. Thematic content analysis (Braun & Clarke, 2006) was applied to the notes by one author to form categories. The question guiding the analysis was, "How can Virtual Council lower the thresholds of participation?". For the qualitative data analysis, a structure consisting of multiple stages was designed in a similar (but simplified) manner, as described by Burnard (1991). The stages constituting the analysis were the following: 1. Establishing an overview of the data through reading all of the interview notes, 2. Systematically reading and annotating the notes, 3. Initially creating categories through open coding (Malterud, 2012), 4. Iterating and combining categories, 5. Re-reading notes through a perspective concerning each category, 6. Elaborating the category and linking commentary to highlight the nature of affiliation for items in each category, and 7. Setting the categories in dialogue with the theoretical framework and previous studies.

3 RESULTS

3.1 RQ1: How is the use of Virtual Council related to societal participation self-efficacy?

Young people's use of Virtual Council and self-efficacy in relation to societal participation was studied through the statistical testing of the variable Societal participation self-efficacy. This testing includes a comparison of the societal participation self-efficacy sum variable before and after the week-long use period of Virtual Council to elicit a possible difference before and after using the service.

Running a related-samples Wilcoxon signed-rank test on the sample (n = 17) to inspect the difference in the variable Societal Participation Self-efficacy before and after measurements did not show a statistically significant change (Z = -.735, p = .462). This result reflects no change in societal participation–related self-efficacy at the group level during the use period of Virtual Council.

To further explore the possible changes in societal participation self-efficacy before and after using Virtual Council, only answers of participants that had a smaller initial value in the Societal Participation Self-efficacy variable were inspected. Filtering for further testing of those whose score for the Societal participation self-efficacy sum was below the median (4.13) leaves half of the participants (n = 9) for testing. Running a related-samples Wilcoxon signed-rank test suggests a statistically significant difference between the before and after measurements (Z = -2.314, p = .021, Bonferroni corrected p = .042). Figure 1 illustrates this difference.

3.2 RQ2: Does the use of Virtual Council lower the threshold of societal participation?

Research question 2 explores the relationship between using Virtual Council and the threshold of participation in societal matters through various activities. This relationship is elucidated by comparing participants' attitudes towards an activity before and after the one-week use period of Virtual Council.

To inspect changes in the attitudes towards various activities related to societal participation, the before and after measurements for each item were aggregated into one variable that reflects the change, i.e., whether the threshold to participate societally through an activity was increased, lowered, or stayed the same. As visible in Figure 2, for almost half the participants, the threshold to "share something political on social media or through email or other online means" decreased. Similarly, for roughly a third of the participants, the threshold to "support a cause by using a badge in my profile or cover picture on some social media service" and to "wear a badge, pin or flag that is related to a campaign" was lowered. Additionally, for roughly a third of the participants, the thresholds to "contact an MP, minister, official or local politician" and to "support an ideological group or community by liking a page, etc." was lowered. For two participants, the threshold increased to "support a cause by

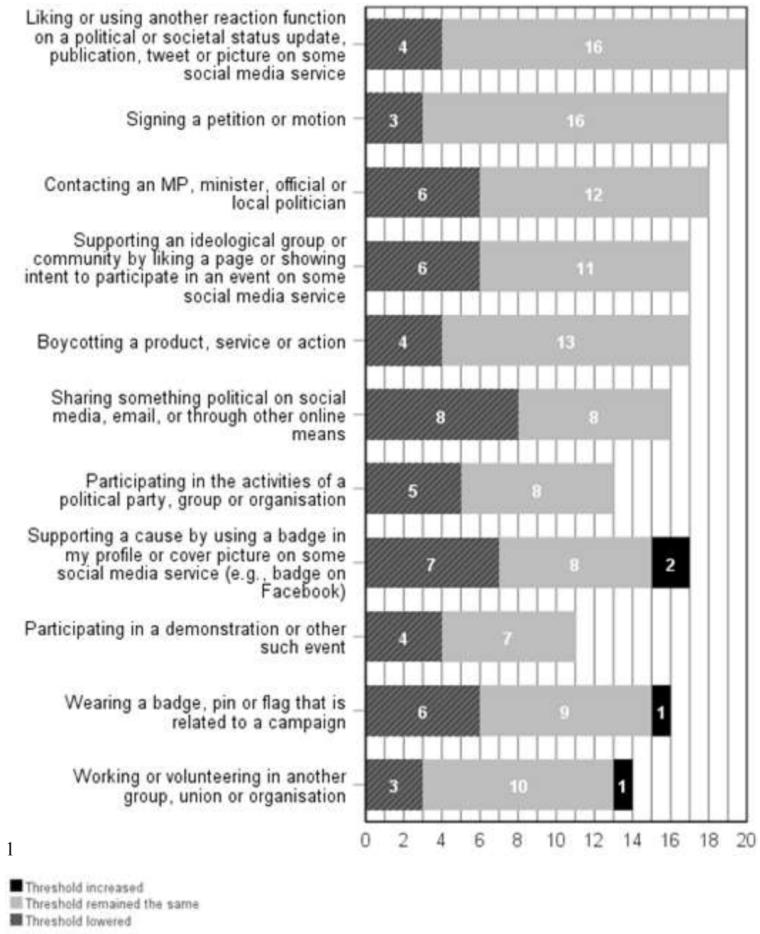

Figure 2: Changes in thresholds for participation through various activities.

using a badge in my profile or cover picture, etc." Additionally, for one participant in both "wearing a badge, pin or flag that is related to a campaign" and "working or volunteering in another group, union or organisation", the threshold increased.

The interviews also elucidated the relationship of usage of Virtual Council and experienced thresholds for participation. Eight categories of aspects related to the guiding question "How can Virtual Council lower the thresholds of participation?" were identified from the interview notes. Next, these categories are introduced, and a linking commentary is presented to highlight the nature of affiliation for the items in each category. The identified categories are summarised in Table 1, with the number of interviewees that mentioned at least one aspect in a particular category.

Seven interviewees used expressions such as "*easy to use*" and "*clear*" as they described Virtual Council or some of the solutions applied in it, for instance "*The discussion area was simple and easy; I liked it.*" and "*It was easy to use, simple, and I found what I wanted to find. [...] Documents were clear, and it was easy to send and receive messages. [...] Seems easy to use.*" Five out of eight participants discussed their feelings of enhanced societal empowerment and activity invoked by the use period. A participant stated that "This is official, and the information [participant input] from here is propagated further [to decision-makers]." Another participant elaborated: "*I was able to participate just fine, and I helped others.*"

Table 1: Categories identified in the interview data

#	Category	Number of interviewees
1	Ease of use and clarity	7
2	Enhanced societal empowerment and activity	5
3	Safe space	5
4	Features or functionalities in Virtual Council that support participation	5
5	Potential complementary service	4
6	Interesting theme	3
7	Have an effect / Reach the decision-makers	1
8	Personally suitable way of participating	1

Virtual Council offered a safe space to promote interaction and discussion over societal issues, as it does not require revealing personal information and enables communication with pseudonyms. The importance of the possibility to participate in the exchange of ideas through pseudonyms was manifested in how the participants discussed their feelings towards the use of Virtual Council (5 participants). Nevertheless, the sense of safety was also linked to the discussion not being completely anonymous, as they knew others who were participating in the council.

Also, features or functionalities that supported participation in Virtual Council were identified and characterised by five participants. One of them said: "*Documents from which I could read [. . .] [are] a positive [feature].*" Another stated that: "*Understandable instructions. [. . .] And it was good that there was this material that needed to be read. [. . .] Votes, questionnaires and chats were good.*"

Virtual Council was also seen as a potential complementary service in the plethora of participation services, offering a new channel for participation by four participants. One of the interviewees said that "*Seems like a good channel for young people.*" Another further elaborated that "*At school, we are fed that we should remember to participate, and they just always give the same [types of participation]: go vote, gather names for a petition, [. . .] so this kind of way would open possibilities. [. . .] I have not run into this kind of service, so personally, I think this is a necessary service.*"

Three participants separately pointed out that they were personally interested in the discussed theme of climate law renewal. One said that: "*It was useful to read and to see where I could do better in having an effect on climate change or politics or participating and perhaps trying to mitigate harmful emissions and what I could do.*" Moreover, one participant asserted that the Virtual Council use period enabled a feeling of being able to have an effect on issues and that he/she could reach the decision-makers: "*Indeed, I felt like I would be able to have an effect. [. . .] Virtual Council is different in a way – it is certain that the information goes further and does not just stay with the closest ones. Here [in Virtual Council], it is more certain that one is able to have an effect.*" Furthermore, a participant discussed her feelings in relation to self-expression and thought that Virtual Council offered a personally appropriate way of participating: "*For me, it is that [. . .] that I can write. I do not want to go to demonstrations so that I have time to think about rationalisation for my own views.*"

4 DISCUSSION

The results do not suggest a group-level difference between the before and after measurements of societal participation self-efficacy. However, when focusing on the participants who initially had lower societal participation related self-efficacy, a statistically significant change emerged, reflecting an increase in societal participation related self-efficacy. The answers to the questions regarding thresholds of participation through certain activities differed between the before and after measurements among a significant proportion of the participants in various activities. In seven out of eleven items, more than a third of the participants changed their views on whether they could imagine themselves participating as described in the activity. This change was visible between the measurements that were executed before and after the week-long use period of Virtual Council. Changes occurred in both digital and non-digital spheres of societal participation.

The identified aspects related to lowering the thresholds for participation included the feeling of enhanced societal empowerment and activity. Moreover, other aspects that were identified consisted of Virtual Council being clear and easy to use. Additionally, Virtual Council offers a feeling of safety through anonymity and an understanding conversation atmosphere. Virtual Council was also seen as a service that offers a usable addition to the plethora of participation channels, especially for youths. Various features and functionalities of Virtual Council, such as materials and documents supporting discussions, instructions, questionnaires, and chat, can contribute to lowering thresholds of participation.

The participants identified and named helpful knowledge acquisition–supporting features or functionalities, such as the documents and materials section. This is connected to a lack of information as one of the key obstacles for participation, which is described by Pietilä et al. (2019). Virtual Council succeeded in strengthening the belief that one's actions make a difference, as interviewees pointed out, which may alleviate the inefficiency-related disengagement highlighted by Hibbing and Theiss-Morse (2002).

Another obstacle for participation outlined by Pietilä et al. (2019) is fear of conflicts. Furthermore, Hibbing and Theiss-Morse (2002) described the connection between conflict-ridden impressions of politics and disengagement. In this week-long test period, Virtual Council was experienced as safe, and the possibility of participating anonymously was identified as a factor that could prevent a user from being targeted, thus lowering the threshold of participation and reducing the fear of being stigmatised.

Pietilä et al. (2019) mentions a lack of interest as one of the key obstacles for youth participation. Psychological empowerment due to involvement with acute societal issues leading to societal participation self-efficacy enhancement (Leung, 2009) and youth's increasing interest towards environmental themes (Marques et al., 2020) manifested in the interviews as mentions of the theme (Climate Change Act renewal) being interesting. These may have contributed to lowered thresholds.

According to Bandura (1995), self-efficacy can be strengthened by supporting defining factors such as providing occasions of successful learning, peer experiences and positive feedback from the social environment. Moreover, Theiss-Morse and Hibbing (2005) summarise the contemplations of Fiorina (1999) and Levi (1996) and elaborate that belonging to a group can enhance an individual's learning of democratic values and of becoming politically active. As a phenomenon, this was not explicitly identified by the interviewees in the context of Virtual Council. However, the small-group activities were affiliated with feelings of safety. Perhaps the use process and features should be developed so that Virtual Council would enable a more cohesive experience of belonging to a group, for instance, through adding functionalities that encourage and enable more ways for giving positive feedback to other users.

5 CONCLUSION

The results of this study propose that use of Virtual Council can support societal participation self-efficacy and affect attitudes towards various activities under the wider umbrella of societal participation. The various ways in which the service enhanced societal participation self-efficacy among the participants are affiliated with previously identified obstacles and enabling factors for participation. This finding should encourage the decision-makers and officials to further explore the possibilities in digital participation and to utilise the empowering possibilities of eParticipation services that address the user needs of users with various backgrounds.

However, the specific mechanisms through which Virtual Council or, more broadly, eParticipation services that may produce these effects need to be studied more extensively. This incorporates thorough and systematic testing of services that utilise various ways of interaction and include citizens from diverse backgrounds regarding their previous experience and perceived ability in societal participation. Also, possible long-term effects need to be explored.

ACKNOWLEDGMENTS

This work was supported by Strategic Research Council of Finland: ALLYOUTH grant (Decision no. 312693 and 326605).

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PUBLICATION IV

Citizen-centric socio-cognitive model for societal participation

Pietilä, I., Meriläinen, N., Varsaluoma, J., & Väänänen, K.

Short paper. EGOV2021 – IFIP EGOV-CeDEM-EPART 2021 conference and in Proceedings of Ongoing Research, Practitioners, Posters, Workshops, and Projects at EGOV-CeDEM-ePart 2021 co-located with the IFIP WG 8.5 International Conference EGOV-CeDEM-ePart 2021. CEUR Workshop Proceedings, CEUR-WS.org 2021.

CITIZEN-CENTRIC SOCIO-COGNITIVE MODEL FOR SOCIETAL PARTICIPATION

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Abstract: To enable sustainable development of societies the frameworks through which the services that facilitate participation need to consider various human aspects. Previously created (e)participation (Electronic and non-electronic participation) frameworks have been process and system oriented. In this paper, a novel model draft to describe (e)participation is proposed. The model provides a multidisciplinary theoretical framework to support research of (e)participation and a tool to support activity planning and impact assessment for the public and 3rd sector actors.
Keywords: eParticipation, societal participation, framework, model

Acknowledgements: ALL-YOUTH project funded by Strategic Research Council within the Academy of Finland & JÄLKES-Research project funded by Helsingin Sanomat Foundation

1. Introduction

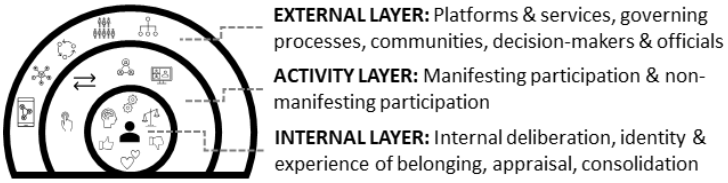
Societal participation refers to activities through which people take part in societal or decision making processes. These can include e.g., voting, discussing politics (Pietilä et al., 2019), political party activities (Harris et al., 2010), community services, (Adler & Goggin, 2005), and contacting representatives (Weber et al., 2003). In this paper, societal participation is regarded as a broad term that also includes latent participation (Ekman & Amnå, 2012) and other activities that have been considered informal and non-parliamentary, e.g., demonstrations, consumer choices, boycotts, and sharing contents online. (Stolle & Hooghe, 2011; Meriläinen and Piispa, 2020; Meriläinen, 2021). eParticipation is a form of societal participation (E.g., Meriläinen, 2021; Pietilä et al., 2019).

Jaakkola (2020) defines theory synthesis as integrating concepts over different theoretical approaches and models as frameworks which describe relations between constructs. Previous frameworks and models have enabled dissecting eParticipation into separate domains of stakeholders and tools (Kalampokis et al., 2008) and operating on service acceptance (Panopoulou et al., 2018). Also, descriptive models (Sæbø et al., 2010) and taxonomies (E.g., Sæbø et al., 2008; Susha & Grönlund, 2012) have been created. Moreover, the more traditional ladder-style models for participation (Arnstein, 1969) have been criticized for their lack of applicability (Grönlund, 2009).

eParticipation research lacks models that enable operating on participation through external, activity, and internal levels explicitly. We propose a model which provides a step towards a unified integrative framework for broader conceptualisation of eParticipation and societal participation.

2. Model proposition

Figure 1: Citizen-centric socio-cognitive model for societal participation



As described in Figure 1, the **External layer** consists of artefacts, which may include individual platforms and services that enable conducting participation. Processes, communities, community members, decision-makers and officials, and agenda transfer also reside in the external layer. **Activity layer** is further divided into manifesting and non-manifesting categories. Manifesting participation denotes all the activities that take form outside an individual and are executed by an individual, such as NGO activities or voting. Non-manifesting participation signifies activities that do not take form outside an individual, e.g., information search and consumption. **Internal layer** refers to the participation-related phenomena, which take place only inside an individual, such as opinion formation and societal participation self-efficacy. The Layers are linked to theory in Table 1.

Table 1: Examples of concepts included in the model and related research (Tentative, incomplete)

External layer	Artefact user experience (Pietilä et al., 2021a;2021b), Transfer of agendas and frames (E.g., McCombs and Reynolds, 2009; Meriläinen 2021; Meriläinen 2014), Artefact / eParticipation service acceptance (Panopoulou et al., 2018)
Activity layer	Latent participation (Ekman & Amnå, 2012), Digital participation (Pietilä et al., 2019;2021a;2021b), eParticipation (E.g., Sæbø et al., 2007), political participation (Pietilä et al., 2021b; van Deth, 2001)
Internal layer	Societal participation self-efficacy (Pietilä et al., 2021a; Bandura, 1977; Solhaug, 2006; Condon & Holleque, 2013), having one's voice heard, opinion formation, appraising new views

The model recognises (e)participation as a complex set of processes that are interconnected with e.g., social, and cognitive resources. As a theoretical framework it enables a transdisciplinary approach by providing a lens to operate on participation through different epistemological and disciplinary perspectives (See e.g., Boon & Baalen, 2019) (Figure 2). Furthermore, the model enables analysis and compartmentalisation of e.g., participation at activity level. This can support for instance activity planning and impact assessment among 3rd and public sector actors. (Figure 3).

Figure 2: Transdisciplinary disposition

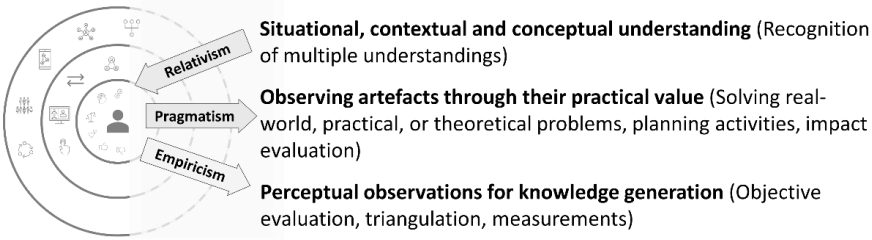
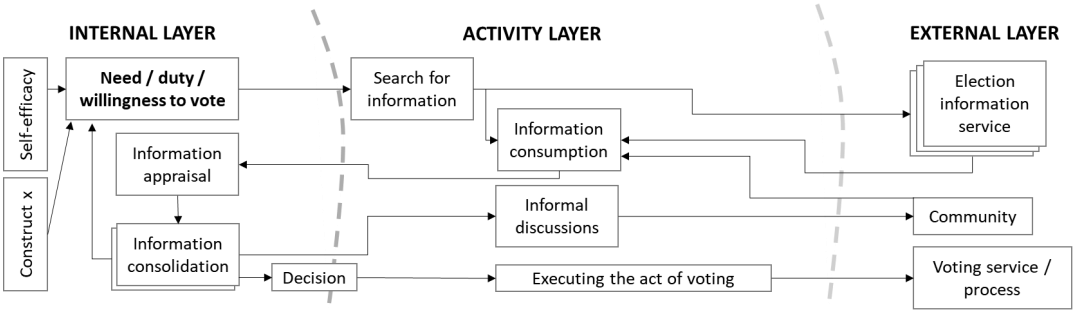


Figure 3: Oversimplification of voting process structured with the model



3. Limitations and outlook

The model is developed in Finland, in a democratic state, and thus its generalisability and applicability in e.g., developing countries is limited. Wide theoretical elaboration of the included concepts is restricted due to publication page limit. As the model is incomplete, there are various limitations in specifications. In the future, the model is further developed and applied in theoretical and empirical research. Also, the model will be evaluated with public and 3rd sector actors.

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PUBLICATION V

Digital solutions supporting young people's societal participation during the early stage of COVID-19 lockdowns in Finland

Pietilä, I., Kallio, J., Meriläinen, N., Varsaluoma, J., & Väänänen, K.

Under review in Government Information Quarterly. Elsevier.