Public Management Review

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rpxm20

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To cite this article: Sofi Perikangas & Sanna Tuurnas (2023): Design for inclusive digital co-production, Public Management Review, DOI: 10.1080/14719037.2023.2224819

To link to this article: https://doi.org/10.1080/14719037.2023.2224819

Published online: 21 Jun 2023.

PUBLIC MANAGEMENT REVIEW
https://doi.org/10.1080/14719037.2023.2224819

Routledge
Taylor & Francis Group

Design for inclusive digital co-production

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ABSTRACT
In this article we identify design principles for digital co-production and analyse how they can enhance inclusion. We focus on digital co-production in a community development project by studying the accessibility and interaction of the digital co-production events during the Covid–19 pandemic which increased the need for digital co-production methods and created a need for new designs of such processes. From the perspective of design, inclusion needs to be addressed both at system level as meta-design and during implementation by enhancing accessibility and interaction.

ARTICLE HISTORY Received 02 June 2022; Accepted 06 June 2023

KEYWORDS digitalization; inclusion; co-production; design; public management

Introduction

Our study focuses on inclusion in digital co-production in a community development project setting. Co-production has been a topic of interest in several community development pursuits recently, some also addressing the development of digital technologies as part of the evolution of co-production (see Vanleene and Bram 2018; Zou and Zhao 2021). The Covid–19 pandemic moved co-production from streets to the digital environment, thus creating a need for new designs for co-production processes.

In this context, we understand co-production as an umbrella term for government-citizen interaction in different levels and forms of public policy and service formulation (Eriksson 2022). In the same way, e-governance has been seen as a way to increase the quantity and quality of citizen-government interaction, and digital co-production has been seen as a core process to succeed in such interaction (Meijer 2015). Against this backdrop, this article focuses on digital co-production. Digital co-production has the potential to overcome challenges linked with face-to-face co-production, as digital forms can overcome time and space limitations, help in mobilizing citizens, and save costs while fostering the exchange of information (Zou and Zhao 2021, 4; Kjellström 2021, 229–230).

Inclusion is another topical issue in public service management and citizen participation. Following Eriksson (2022; see also Jakobsen and Calmar Andersen 2013), we consider that inclusion has not yet attracted enough co-production research. The

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questions of who gets a chance to participate and how seem to pose an eternal challenge that was presented in the classic citizen participation literature (Arnstein 1969; Fung 2015). The question of inclusion opens a Pandora's box of co-production process planning and design. For analysing such events, it is essential to pay attention to the design of the co-production process.

Osborne and Strokosch (2013) stress that the key challenge in co-production is to find the right mechanisms to free the potential underlying the process. We believe that the design of the co-production process can shed light on such mechanisms Seemingly small details and design elements can considerably affect co-production outcomes (see, Kjellström, 2021; Hardyman, Daunt, and Kitchener 2015), but this approach is still not common in the research field of co-production. As Sicilia et al. (2019, 237) note, few studies have analysed 'the design of the co-production process under investigation in any depth'.

Overall, our analytical framework builds upon the literature on co-production, citizen (e-)participation, and design studies, offering a window to examine inclusion in digital co-production from the viewpoint of design. Nieuwenhuizen and Meijer (2021) note a need to shift the focus of digital co-production research from an effectiveness approach to encompass the themes of participation and equality. There is also a need to understand the interaction in digital settings rather than focusing on the technologies (e.g. Kjellström, 2021; Rodriguez Müller et al. 2021).

Thus, our research question is: *How can design enhance inclusion in digital co-production?* Specifically, we study how a systematically designed digital co-production process can help to sustain and increase inclusion. We approach the design of digital co-production in this article through the concept of meta-design, the design work and process in the background of the design of public services, and as a part of a digital co-production process (Cepiku et al. 2020; Giaccardi and Fischer 2008). By this approach, the general nature of this research can be described as 'bottom-up' as it focuses on a micro-level observation of a co-production process.

The context of the study is a research and community development project in a Finnish city with a population of approximately 68,000 habitants. The data acquisition was conducted during the Covid−19 pandemic period, 2020–2022. Two residential areas in the studied city have a bad reputation and more social and societal problems than other parts of the city; moreover, their inhabitants have a relatively low socioeconomic status. Empirically the study addresses digital co-production activities in the setting of a research project focusing on those areas and working closely with a city-driven community development project.

Overall, we consider the micro-level occurrences in digital co-production events to be essential for understanding and developing the public service management level; the choices made at the micro-level can be directly linked to service management outcomes (Hardyman, Daunt, and Kitchener 2015). Our research strategy, focused on a thorough and detailed examination of a digital co-production process offers valuable insights for researchers, but also facilitators and managers dealing with online and offline modes of co-production.

Digitalization meets co-production

Digitalization is a key trend in public management across the globe. As Bovaird and Loeffler (2015, 16;135) suggest, for the last few decades, technological changes,

particularly in information and communication technology, have been notable external factors driving public policy reforms. On the other hand, co-production has been seen as a radical alternative to traditional means of citizen participation that the governments have executed, and an opportunity to miss the ills of traditional citizen engagement (ie. Osborne and Brown 2011). Co-production can be conceptualized by stating that it brings together the necessary stakeholders concerning a service or system and offers them a voice to influence the decisions that affect them (Brandsen and Honingh 2016, 427).

In addition, implementing co-production has been made easier and possibly more accessible, inclusive, and transparent by technological advances (Brandsen et al. 2018, 4–5; Meijer 2015). Digital co-production can be considered a co-production strategy because it typically involves technology as a value that can bring effectiveness, innovation etc., to the traditional co-production (Bovaird and Loeffler 2015). It should follow a process that is adaptive, iterative and context-sensitive (Rosen and Painter 2019, 338). The term *digital co-production* can take many shapes of digital technology-assisted formats of co-production. Such formats can include digital applications, virtual environments, technology-assisted events, social media platforms, and other group communication tools (Lember 2018).

In addition, much of the focus in digital co-production studies has been on digital participatory platforms (DPPs; Falco and Kleinhans 2018). Those include *Maptionnaire*, a map application where the users can pinpoint different elements on familiar locations. Such platforms could offer citizens a say in the development and decision-making processes of government (Falco and Kleinhans 2018; Lember 2018). Recent research also concerns social media participation and the opportunities presented by it (Lember 2018, 116–117; Jalonen and Helo 2020; Lember, Brandsen, and Tõnurist 2019; Lubna; Alam 2020), simplification and tailoring of digital services (Larsson and Skjølsvik 2021), smart city services (Lember 2018, 117) and governance strategies for online and offline participation (Rui and Wang 2022, 506).

During the Covid−19 period, digital technologies were applied to co-produce public services because meeting people face-to face became impossible (e.g. Zou and Zhao 2021; Kjellström, 2021). That partially changed the discussion of digital co-production and highlighted a need to analyse digital co-production more as a co-production strategy, focusing on the interactions on the platforms rather than technologies and their outcomes. Our study is focused on this approach: the use of digital software in a situation where face-to-face interaction was initially planned but impossible to execute at the time.

Inclusion in (digital) co-production

Inclusion in co-production typically means how co-production can create more inclusion or how it is an inclusive practice aiming to empower all stakeholders, especially citizens (i.e. Kleinhans, Falco, and Babelon 2022; Rosen and Painter 2019; Strokosch and Osborne 2016). We discuss inclusion in this article with reference to Pietilä et al. (2021), where evaluating the quality of people's participation is central and must be equably executed to enable the deliberation of various opinions and perspectives. Eriksson (2022) approaches inclusion in co-production similarly to Pietilä et al. (2021) and divides it into external and internal inclusion. He handles the division further by introducing constrainers and enablers for both. External co-production in

digital co-production can relate to the accessibility dimension in inclusion. Internal inclusion, in contrast, can be related to the forms of interaction in digital co-production. Accordingly, we approach inclusion issues in a digital co-production process from two viewpoints: (1) inclusion by accessibility and (2) inclusion by interaction.

Inclusion by accessibility is approached in our study through the elements of co-creation method, selection of participants and access to software. Accessibility is typically related to several issues such as 'accessibility for people with disabilities; access to and quality of hardware, software, and internet connectivity; computer literacy and skills; economic situation; education; geographic location; culture; age, including older and younger people; and language' (Lawton Henry, Abou-Zahra, and White 2010). From accessibility point of view, the lack of inclusion in a digital co-production process may relate also to the resources required for participation, such as a functioning web camera or stable internet access. However, the participant might also lack experience in using digital tools or software or a belief in their capability to participate in co-production through the selected co-creation method.

The above are typical examples of the so-called digital divide caused by the systemic inequalities digitalization brings to the surface, and the covid−19 May have even widened the gap (Lai and Widmar 2021). Zou and Zhao (2021, 16) note that because of digital divide, the use of digital technologies in co-production may prevent some residents' voices from being heard, and thus they may end up getting the services they would not have needed because they never had a chance to contribute to co-production independently. Thus, software access should be as simple as possible to lower barriers to access (Eriksson 2022).

The professionals might also limit recruitment of citizens by asking a narrow selection of people to participate (Makey et al. 2023, 3). Demographic recruitment of citizens can be used as a strategy to minimize inclusion bias (Fung 2003; Nabatchi 2012). Although, Tai, Porumbescu, and Shon (2020) have shown that e-participation may help less affluent groups of citizens to mobilize in public service provision, and through this, also participation in offline modes. This shows a positive signal for digital co-production. In the same way, Lee and Kim (2018) show that citizens with weak (offline) social ties promote e-participation.

By approaching *inclusion as interaction*, we focus on interaction with software, group dynamics and the different roles of the participants in the digital co-production sessions. Technology plays an increasingly important role in co-production by changing traditional practices. The change may materialize in the interaction with new digital tools and environments for interaction (Lember 2018, 124). The general context and the antecedents of co-production influence the outcomes of collaboration and collaboration dynamics (Cepiku et al. 2020, 16). The expectations and preconceptions of the stakeholders can be managed by participation strategy, the meeting design, and impacting the conceptions.

Notably, the group dynamics in co-production are always connected with the power relations and the distribution of power between people and institutions (Vanleene and Bram 2018, 201; Rocha et al. 2021, 10). Digital co-production events can affect the power relations between the group members, owing to the positioning of all the participants on the same screen (Kjellström 2021). Moreover, professionals' central role in enabling or hindering inclusion comes to question also here in terms of whether

they promote the needs of professionals and institutions or recognize the needs of the communities they are supposed to serve (Makey et al. 2023, 3).

The lived realities in the communities are often complex and diverse, and the solutions to them are not linear processes, which many professionals and organizations fail to recognize (Crisp et al. 2013, 251; 253; 255). Thus their communication may lack meaning in digital co-production events or hinder inclusion (Lee and Kim 2018). However, the strong presence of professionals in the co-production process may also invoke an unconscious desire to please them. Managing the relationships between stakeholders can be facilitated by the design and management of group dynamics, which have been reported to be central to co-production (Vanleene and Bram 2018; Cepiku et al. 2020, Rocha et al. 2021). Engagement, iteration and sharing of power while understanding its constant imbalance are key measures for addressing inclusion of digital co-production events (Rosen and Painter 2019, 339). Despite some encouraging results, inclusion remains a wicked issue in co-production in online and offline settings.

The role of design in co-production

Some recent studies have shown the importance of the design of co-productive processes (e.g. Lee and Kim 2018; Madden et al. 2020; Keppeler et al. 2022). Clark (2018, 372) suggests that the designers of public participation need to first take a step back from problem solving, to understand the problem setting and create a design for public participation, where we position co-production in this article, in order to enhance equity. In addition, Romme, Georges, and Meijer (2020) suggest design science, the utilization of design methods in research, as an approach to study public administration from a wider perspective.

Designing for co-production processes can drive desired cultural or organizational change and a system-level transition trough designated tools and methods. These tools can be concrete game-like systems or facilitated processes, aimed to help a certain group of people discuss problems, create solutions, and make decisions. (Vaajakallio 2012) Hyysalo et al. (2019, 890) address this topic from the viewpoint of intermediate co-design, or meta-design, where the process is designed to ensure the needed quality and quantity of outcomes.

Meta-design was first introduced by Giaccardi and Fischer (2008) as a design paradigm for developing complex systems that can evolve with the contribution of the end users. This meta-design might be a designed platform, or a method or tool forming a basis for services to be co-created. Later, the concept was used in the design of e-government services (see Fogli 2013; Fogli and Parasiliti Provenza 2012). This approach shifts the focus from the study of co-production as merely the design of public services to the preparatory actions of a co-production platform or tool and analytical iterations of the process, which is also promoted by Clark (2013).

This article reports on the session design for co-production events. Kjellström (2021) suggests session design can boost digital co-production events. The events can be framed around different components by managing: (1) The expectations and preconceptions of the stakeholders, (2) The relationships between them, and (3) Governance and facilitation arrangements (Greenhalgh et al. 2016, 406). The co-creation method selection is important in the session design of co-production events. Jianbin, Zhang, and Ren (2022, 13–15) address that the selected co-creation method

has to have a universal theme, ease pressure on participants to interact with one another, and avoid cognitive frustration and motivate group participation.

Accordingly, the designers and facilitators of co-production events must consider inclusion in terms of surroundings, language, and forms of participation in online as well as offline settings (see Eriksson 2022; Jakobsen and Calmar Andersen 2013; Lee and Kim 2018; Tuurnas 2021). Accessibility should be used as a key strategy in the design of services to create more inclusion, and the elements of co-creation method, selection of participants and access to software are central design principles for inclusive digital co-production (Lazar, Goldstein, and Taylor 2015, 220–223; Rosen and Painter 2019).

Co-production creates complexity by engaging a variety of actors from different areas of organizations and external stakeholders, such as citizens. The processes can cause value tensions between participants, and the coping behaviours of the participants will influence how potential conflicts are overcome; if they are. (Jaspers and Steen 2019). This can be addressed also to digital co-production settings (eg. Lember 2018; Voorberg, Bekkers, and Tummers 2015). The designers and facilitators of co-production should make plans to equalize any power relationship between members (Makey et al. 2023, 3).

The meta-design perspective, therefore, can illuminate the purpose and goals of co-production and how it can be utilized systemically in governing public organizations since a well-planned and managed co-production process should be at the centre of public service design (Cepiku et al. 2020). To sum up, our analytical framework is based on literature on co-production, citizen (e-)participation, and design studies, offering a window to examine inclusion in digital co-production from the viewpoint of design. We construct the analytical framework based on two elements that focus on micro-level occurrences in the digital co-production process:

(1) Inclusion by the accessibility of a digital co-production by helping to tackle the digital divide and selection bias
(2) Inclusion by interaction in the digital co-production balancing uneven power relations and group dynamics.

These two elements are built upon a meta-design, the systemic approach to the process, based on six design principles that the literature emphasizes: co-creation method, selection of participants, access to software, interaction with software, group dynamics, and roles of participants.

Presentation of case and data

Our research data were collected for the Lähiö-Inno research project, which was funded by the Finnish national suburban program that ran between 2020 and 2022. The project explored the issue of segregation in suburban and inner-city areas and how to strengthen social sustainability and create citizen-led innovations. Eight researchers in total were involved with the project. The researchers gathered data by organizing digital co-production events with the residents. The knowledge created in the events offered visions for the development of the areas and their services.

Demographic recruitment of local citizens was conducted by inviting *citizen boards* to the events. In Finland, municipalities are bound by law to organize citizen boards

that gather local citizens together to represent a certain segment of the citizenry in decision making processes. (Local Government Act 2015) In this case, the citizen boards of the elderly, disabled, immigrants, youth, and people from a certain geographical location were included. The citizen boards comprise volunteer citizens, who can propose and comment on development ideas in their regular meetings supported by the city. That way they have a possibility to impact the decision making in the city. The citizen-boards are semi-institutionalized regular meetings, and the boards are selected for a one-year period. One board has ten members. In addition, the researchers and city administrators decided to invite active locals representing the same demographics in the events, even though they didn't formally belong to the citizen boards. Even though these citizens were not part of the boards, they had a connection to the city administration through another city development project. The participants are presented on Table 1.

The research data comprised meeting notes focusing on the planning of the digital co-production process and the actual co-production events, other documentation relating to the sessions, such as invitations and presentation materials, such as invitations notes, as well as the transcribed co-production discussions and video recordings from the meetings. Interactions, the micro-level occurrences, during the sessions were observed by reading the transcriptions and watching the video recordings from the meetings. The material was gathered over four digital co-production events held at the end of 2020 and the beginning of 2021, over a six months long time period. In each session, one citizen board was present.

In the project, also additional digital co-production events were held with more randomly selected participants, as with a certain immigrant society members and a group of unemployed residents, but the data from those sessions is not included in this study for comparability and cohesion of the data. The citizen boards are publicly mandated, semi-institutionalized governance networks. In the events for citizen boards, the researchers and public administrators applied a mix of adaptive

Table 1. Participants of the co-production events.

Citizen board in one co-production event	Familiarity with each other	Demographics	City administration	No. of say during the meeting (average)
Resident board (*n*=6)	All familiar with each other	Six local residents, all members of the Resident Board	One administrator present	19 (per facilitator) 21 (per resident)
Youth board (*n*=5)	All familiar with each other	Five local residents, all members of the Youth Board	One administrator present	36 (per facilitaror) 36 (per resident)
Immigrant board (*n*=3)	Not familiar with each other	Two members and one vice member of the Immigrant Board	No administrator present	25 (per facilitaror) 18 (per resident)
Senior and disabled boards (*n*=6)	Not all familiar with each other	Five active local residents representing the demographic, and one local resident is a member of the Disabled Board	One administrator present	13 (per facilitator) 31 (per resident)
Total 20 participants				

facilitator strategy and an institution builder strategy to the co-production process. Central in these strategies are a limited number of appointed network members, where the institution builder perspective links the networks also with selected self-convened active participants of the community. (Hagedorn Krogh 2022, 649).

Thus, in this study, we included only the sessions with semi-institutional citizen board members and in one case the additional active citizen stakeholders as co-producers. After the sessions, we sent a short questionnaire to the city administrators on the selection and invitation of the participants. In addition, we held a self-reflective discussion meeting with two other research group members. We facilitated the discussion around the topics of group dynamics and the use of the co-creation method and facilitation during the meetings.

As for limitations, we acknowledge that the citizen boards were semi-institutionalized forums for citizen participation and, as such, were staffed by residents who already possess some skills, motivation, and ability to co-produce. We considered the citizen boards, representing various demographics, could offer the most plausible conduit to potential participants and obtain insights from various resident groups in a pandemic setting. The sizes of the focus groups in the events were relatively small and not all citizen board members were present. Thus, we were only able to observe those who did participate in the digital co-production sessions. It raises the possibility of selection bias, meaning that it can lead to biased results and reduce the generalizability of this study since we worked with small groups and people who generally knew each other.

Research design

Our research has basis on the action research approach. We refer to Eikeland (2012), who understands action research as a multitude of relationships and interactions that are in constant flow. In that approach, the different forms of interactions are at the core of the analysis. We also applied an interventionist case study approach to understand these interactions. That approach involved the observation of and participation in the process and the researchers taking an active role (Jönsson and Lukka, 2006). The researcher can then work as an expert immersed in the process as an active participant in co-production (Lukka and Vinnari 2017, 723).

We analysed our data to reveal the interactions and causalities within it by referring to process organization studies by Langley and Haridimos (2011). Processes can be studied in several ways, and a common element is their temporal orientation. In this case study, we examine micro-level interactions in digital co-production events that help to understand the role of design in enhancing inclusion. We observe the micro-level interactions by addressing causal mechanisms (Beach 2016) that occur in one or several of the digital co-production events. The digital co-production events were the single workshops that were organized as a part of the bigger co-production process.

The causal mechanism is discovered from the data by observing occurrences that affect inclusion in the digital co-production process. Occurrences as analytical units included crucial points in the process which were coded as excerpts such as parts of discussion or reflections of the researchers. The criterion for whether the causal mechanism affects inclusivity was that change in the access or interaction within the digital-co-production event was perceived. To secure validity, we used researcher triangulation in the analysis to avoid bias (see Flick 2004).

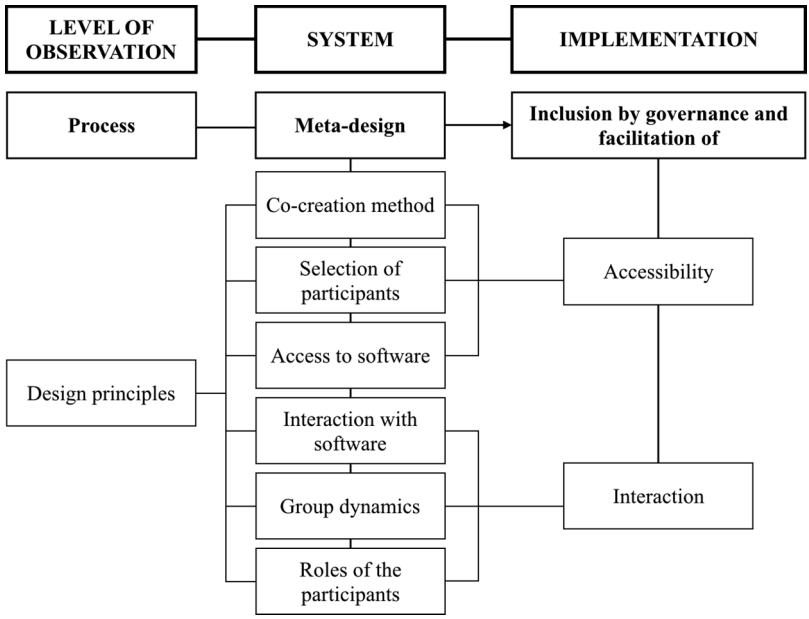

Figure 1. Analytical framework.

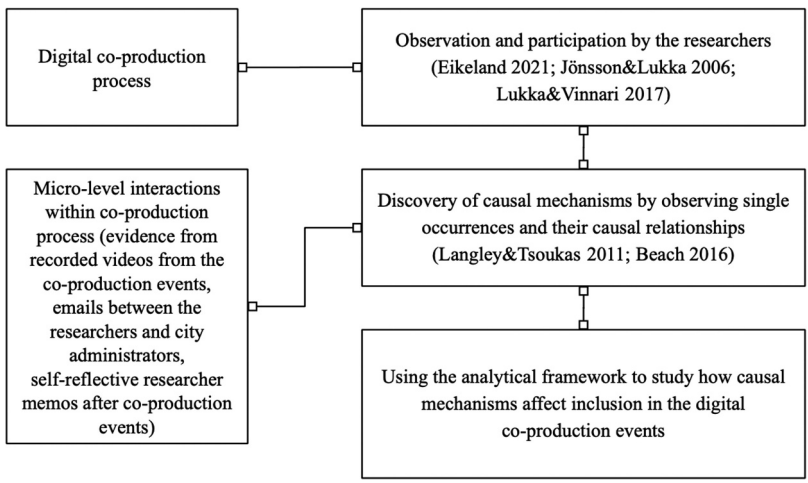

Figure 2. Research design.

We used the analytical framework (see Figure 1) to build the coding frame (Figure 2) and to detect the core elements in the digital co-production process. We conducted the analysis by discovering causal mechanisms that affected the facilitation and governance of the accessibility and inclusion in the digital co-production events, and which thus refine the need for certain design principles in the process. Inclusion by accessibility was analysed by focusing on three aspects of the digital co-production sessions that were presented in our analytical framework: the co-creation method,

selection of the participants, and access to software. Inclusion by interaction was analysed by focusing on three other aspects of the digital co-production sessions: interaction with software, group dynamics, and roles of the participants. To sum up the research design, we moved from the action research approach in the data collection towards the analysis of the digital co-production process, wherein we used the analytical framework as our coding frame (see, Schreier 2014).

Results

Inclusion by the accessibility of a digital co-production process

The initial concept for the digital co-production sessions originated in November 2020 during several planning meetings by the research group. The *co-creation method* combined a focus group meeting agenda with a design research method known as *issue cards*.[1] The issue cards concept was as a slideshow (Figure 3) at the digital sessions, with each slide displaying the main theme of the conversation, the associated illustrations, and the supporting sub-themes.

The themes for the issue cards were decided upon the initial research plan, statistical knowledge concerning the circumstances in the study areas, and preceding conversations with the city administrators involved in the community development project. The causal mechanism affecting the co-creation method was the knowledge of the demographics of the residents in the studied areas. The project's special focus was on improving the life quality of the living areas through housing and infrastructure services for the citizens. Thus, the selected themes for issue cards were: (1) places and spaces, (2) community, (3) living, (4) transport and getting around, and (5) networks. To help the participants reflect on the individual themes; the issue card featured four questions: 'What works?', 'Where do you see space for improvement?', 'What are the problems or what is missing?', 'What are your chances to make an impact?'

The concept was repeated in a relatively similar manner and using the same agenda with all the different groups of participants. Figure 3 depicts one main theme, *places, and spaces*. On the left side of the slide are four pictures depicting a landscape, a pile of

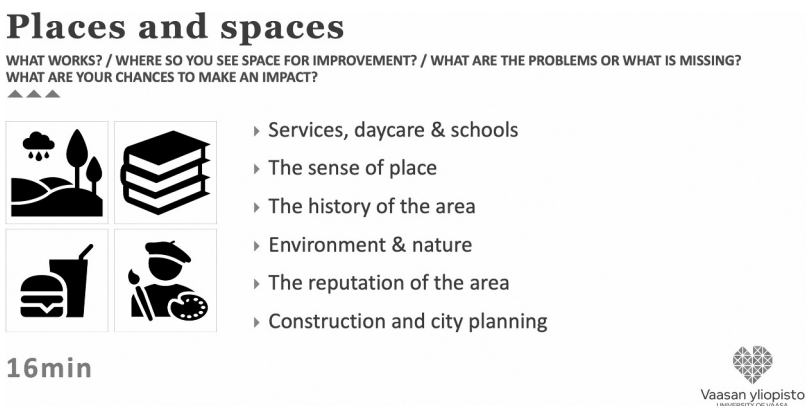

Figure 3. The first theme, places and spaces, with its sub-themes. translated from Finnish to English.

books, a hamburger and drink, and an artist. To the right of the pictures are the subthemes: *services, day-care, and schools*; *the spirit of the place and the atmosphere*; *the history of the area*; *the environment and nature*; *the reputation of the area* and *construction and city planning*. The accessibility perspective of the researchers was in designing material for the co-producers that would support the inclusion of participants with different abilities to associate and reflect with written text and illustrations. In the analysis, the selection of the issue cards method was discussed between the researchers on the light of the participants' reaction to the co-creation method. In general, the participants tended to discuss the themes by going through the list of topics one by one.

The *selection of participants* in the digital co-production sessions was guided by the idea of creating safe spaces for different segments of the citizenry to express their thoughts and ideate solutions for the problems they saw. Thus, in each session, representatives from one demographic group were included (see Table 1). To participate in the digital co-production sessions, interested citizen board members could nominate themselves, and they were selected by vote. The project team and city administrators invited the citizens. The active role of officials in participant selection might have affected the willingness to participate in the process, either positively or negatively. The active role of officials, affecting the selection of the participants, was perceived as a causal mechanism by the researchers. One can assume that participants might have seen more of an opportunity to express their opinions because the invitation came from the city administration than if it had come from a research institution.

Access to software was observed by tracking whether the participants had trouble in attending the sessions. The causal mechanism affecting this was perceived to be the number of connection failures that the participants experienced. In three-quarters of the meetings, some participants had trouble joining the meeting or failed to attend, causing other participants to attempt to reach the missing people through their shared social media channels: 'Alright, you have started; I had a little trouble, this link told me that that link has an error'. These situations also prompted conversations between the participants:

> Facilitator: Next, we have Participant 5. Participant 5, are you onboard? Let's wait for Participant 5 to come on board . . .
>
> Participant 3: I noticed that Participant 5 didn't have a microphone icon showing at all, he may have to enable the use of the microphone on the browser if he joined through that.

These small interactions were seemingly minor problems, but they happened in each session to some extent, typically at the beginning of the session, and thus impacted the interactions between the facilitators and the participants, taking time from the discussions and affecting the overall group dynamics. People had trouble with the software, and some were not committed enough to attend. In addition, even with committed participants, who had relatively good group cohesion, we could detect a digital divide in terms of skills in using software with personal hardware. Therefore, when designing a digital co-production process, it is essential to remember that most people do not possess the latest technology. Various hardware is in circulation, complicating the provision of live technological support. Technological barriers can also trigger a no-show effect at digital co-production events.

Inclusion by interaction in a digital co-production event

The primary factors that affected inclusion by interaction in the sessions were interaction with the software, group dynamics and roles of the participants. The topic of *interaction with software* not only related to accessibility but was present in the interactions throughout the sessions. For instance, the researchers' interaction with web cameras caused the participants to follow their example. This was discovered as a causal mechanism that affected the interactions over the rest of the co-production events. From the beginning, some participants had their web cameras shut off, even though the researchers asked for them to be open. This resistance to instructions was unexpected for the researchers and had not been considered systemically in the design of the meetings. Participants were also hesitant to act according to the researchers' wishes. Below is an example of a conversation between the facilitator and one participant:

> Speaker 14: . . .do I have to turn the camera on?
>
> Facilitator: That's what I hoped, if it's possible.
>
> Speaker 14: Don't freak out; here comes an ugly man in the picture. Now I will push that start video.
>
> Facilitator: Okay, now we see the picture too.

Also, in the beginning of the meetings, researchers who were not active in the discussion closed their cameras when the discussion started in an effort to reduce the visual noise in the discussion, but the action prompted some participants to close their web cameras immediately afterwards. That changed atmosphere of the discussion because some participants were less present than others, thus affecting the interaction between the participants. As a result, participants who didn't have their cameras open took less part in the discussion than those who had their cameras open.

An example of a situation where the existing *group dynamics* affected the nature of the conversation from beginning to end occurred when the leader of the group, who would also be the chair of the council, made a statement about their experience of the question at hand, after which no one questioned it. Also, whether a city official took part in the conversation, the participants tended to agree with them. Here, the existing causal mechanism was perceived to be the group unison among the participants:

> Speaker 11: I could start if the others don't want to.
>
> Facilitator: Yes, you're welcome.
>
> Speaker 11: Thank you. . .one could say that all people living in Ristinummi are more satisfied with living here than those who don't. . .but the reputation is a burden. . .
>
> Facilitator: Alright, thank you. What kinds of thoughts did the others have on this?
>
> Speaker 8: . . .This area's reputation. . .it's not as bad as they say elsewhere in the city.
>
> Speaker 10: . . .I agree with the others, that this reputation is maintained in the newspapers, I don't really follow social media, but almost every day, I go jogging and walking in Ristinummi, and I never experience any insecurity. . .The reputation is worse than the reality.
>
> Facilitator: Okay. Okay, did speaker 14 have some thoughts?

> Speaker 14: . . .I think [. . .] it looks like the problem is largely the reputation that has been created, or has been born and it should be gotten rid of because it certainly doesn't hold true.

The *different existing roles* of group members who know each other beforehand can greatly affect the dynamics of the co-production event and create a scenario where some opinions are not expressed. This is closely related to group dynamics. The amount and nature of interactions with a participant who took chances to voice their thoughts and got agreed with was perveived as a causal mechanism affecting the different existing roles. The target groups being defined groups, such as citizen boards, meant the board leader had some authority over the group. Consequently, the other members largely settled for an observer role, signalled their agreement with what the leader said or at least waited for the dominant person to start the discussion.

Participants seemed to expect the roles they had within the group outside of co-production events would be mirrored in the session. That led the participants with a leading role in the group to dominate the conversation, usually speaking first and the most. The other participants gave space to the leader's opinions by supporting them or by staying silent. It also seems that in the groups that were more unfamiliar with each other (because of a newly formed citizen board or two boards in one session), the number of say (see Table 1), was distributed more evenly between the members. In these cases also the amount of facilitator intervention was smaller. Based on this, group cohesion and settled roles in the group seem to be hindering elements in voicing ones opinions.

Thus, voicing opinions and participation in the event was not divided equally among the participants. In terms of power relations and interaction, participants with critical perspectives may not have felt they had a safe space to express those views because the event was jointly organized by parties who were the subject of their criticism.

The facilitation of accessibility and interaction

In the analysis, we discovered that the facilitators had a crucial role in the sessions: The facilitator could make the conversation more inclusive by giving the floor to participants who would not actively engage in the conversation if unsupported. However, this does not necessarily mean that the more silent participants were willing to talk or voice any other opinions or thoughts than those already voiced by, for example, the group leader.

The researcher's facilitation consisted of the researchers' interactions, such as voicing questions, with the participants and following the co-production event agenda. Several research group members took part in the sessions, which meant that on several occasions, there were as many researchers present as participants. The considerable number of researchers meant that some remained silent for most of the session, and some led the conversation or contributed supplementary questions. The facilitator's job was to ensure that the session followed the agenda and the discussion advanced. Another aim was to ensure that all participants had an opportunity to express their thoughts.

In the researcher's reflection session, the leading facilitators reported that they felt the atmosphere was more difficult to create in a virtual context than in face-to-face meetings. The questions of how to create familiarity and foster trust in the researchers

by the participants were central. In addition, the formalities at the beginning of the sessions felt challenging to the researchers. The necessities of asking for permission to record, addressing data protection regulations, and introducing the research project made the beginning of the sessions information-heavy. The management of the co-production events was also perceived as hard; the digital nature of co-production played an important role in this respect. For instance, the participants could choose the mode of inclusion and level of intimacy (e.g. video on/off) from their own computer, following that the facilitator would lose control over the intimacy levels of the meetings through web cameras, and had to try other ways of making sure the engagement levels were high.

Discussion

Based on the analysis, the possibilities to affect inclusion in a digital co-production process are many. The initiators of the co-production process can impact the accessibility of an individual co-production event by paying attention to the co-creation method, selection of the participants as well as access to the used software. On the other hand, it is also possible to impact inclusion in digital co-production events by affecting the interaction with the selected software, facilitation of group dynamics, and paying attention to the different roles of the participants. All these possibilities are considered also as design principles in our analytical framework, constituting the meta-design of the whole co-production process. Thus, the meta-design approach offers a systemic level to the analysis of inclusion in co-production.

Making inclusive practice the norm may require a radical transformation of public service systems (Crisp et al. 2013, 254). That could mean either universal applications or heavily tailoring of services according to individual capabilities. Our results showed that managing how the participants interacted with the software proved difficult. For instance, time management and group cohesion became difficult to maintain because of malfunctioning software or unskilled operators. In the examined case, selecting commonly used software was intended to overcome the barrier to people being part of a digital co-production process (Eriksson 2022; Kjellström 2021). In digital co-production, the technologies used should be selected mindfully. Larsson and Skjølsvik (2021) have proposed that tailored services can even empower citizens.

The research on design for inclusion in co-production has increased, maybe partly because of Covid−19, but more systematic principles for inclusive digital co-production design would be beneficial. Our results showed that understanding visible and hidden power structures and the different roles of participants are essential for inclusion. Therefore, we agree with Farr (2018), who underlined how power dynamics can be a defining factor when designing a co-production process. Thus, although the literature indicates that group cohesion is important for inclusive and effective co-design (see Trischler et al. 2018), the underlying power relations may trigger controversial outcomes for equal participation.

While there is a long academic tradition of studying group dynamics (e.g. Shaw 1976), we see it as a part of the design process that needs to be taken into account by managers and especially by facilitators of the process. This finding should encourage event designers and facilitators to pay particular attention to the design of group dynamics. The analysis of the micro-level events in digital co-production process showed how seemingly small elements can affect inclusion. Interaction with software,

group dynamics and participant roles were important during the actual interaction. For instance, unbalanced group dynamics also exist in digital modes of co-production, potentially limiting expressions of opinions (see, Vanleene and Verschuere Kjellström 2021).

The designers should simultaneously consider the participants' existing roles in the digital co-production events and also the roles they might assume in the future. Sometimes, a productive event might require the professionals to give space to the citizens by speaking only when invited to. Those designing a co-production process should bear in mind that while it might not be possible to design for equal participation, certain elements in digital co-production can be manipulated to ensure more inclusive group dynamics. It is noteworthy that designing digital solutions is just a first step and the development of it needs constant attention and resources (see Randma-Liiv 2022).

The different elements of digital interaction can intersect, too: different digital distances are created depending on how people present themselves on the web camera (Kjellström 2021, 228–229), or even more so, whether they have their camera on at all. A person using their camera has a stronger presence and thus acquires more space and power in the process. This finding can be linked to the research results of Fledderus (2015), who revealed that participant interaction during a co-production session affects its outcomes.

Here, facilitation plays a key role in tackling harmful behaviour or securing balanced representation during the interaction in a digital co-production event. To this point there are conflicting views. For instance, according to Makey et al. (2023, 3) citizens should always feel they have permission to speak, and they can challenge other participants' different opinions. In any case, facilitation plays a key role in balancing interaction.

Action researchers, as well as design researchers, hold overlapping roles in co-production events; including but not restricted to a facilitator, a participant, a conductor and a pedagogue (Vaajakallio 2012, 78). The facilitators' competence needs lie in the need to orchestrate the interaction and balancing with free speech and fixed turns between group members, while remaining from influencing the content of the discussion (Franco and Nielsen 2018, 751).

If participants challenge each other, the facilitator must carefully assess the atmosphere within the group and adjust the facilitation accordingly. Our study showed that practicing inclusive digital co-production may require the practitioners as facilitators to learn new skills. In addition to digital skills, cultural competency is a skill that is increasingly in demand when working with diverse citizen groups (Taket et al. 2013, 23; Hagedorn Krogh 2022, 649). Thus, the skills of the facilitator, such as the distribution of power, are crucial for inclusive digital co-production (see, Rocha et al., 2021). In an action research process, the balancing between a neutral, inclusive guide and an interventionist who can carry the discussion towards the direction the participants seem to need, is an ongoing challenge that needs self-reflective analysis also between the co-production events.

Digital co-production also carries a risk of tokenism, and thus we consider that the focus should be more on enabling shared knowledge and empowerment among participants (Makey et al. 2022, 3–4; Niewenhuisen and Meijer 2021). As noted by Cepiku et al. (2020, 61) co-producers might be less inclined to participate if they do not feel they are understood or feel their efforts are not valued. Signs of appreciation

increase the motivation to contribute to co-production. Inclusion is also a stepping stone for building trust, which is an element of co-production that is linked to the willingness to participate in it. It's often discussed from the citizen point of view, surveying the motivation of citizens, but it goes the other way too; governmental trust and motivation are equally necessary for co-production to succeed (Rocha et al. 2021; 6, 8, see also Lee and Kim 2018).

Already two decades ago, Brannan, John, and Stoker (2006) outlined the importance of research strategies that address the complex engagement processes and emphasize the reflection of participation practices, not just the outcomes. Also Rosen and Painter (2019, 339–340) notice, 'planning practice needs models that create more inclusive and adaptive processes to deconstruct the power and resource inequalities'. Our study introduces one such example, an inclusively designed co-production process in digital environment, applied in semi-formal institutions that the citizen boards are.

Concerning online and offline participation overall, the study cannot offer research results about differences between those modes of co-production, but strongly supports the idea of Mu and Wang (2021) about a need for a special governance strategy to support digital modes of co-production to tackle dilemmas on representativeness in digital co-production. The use of intermediaries and technical support for enabling participation of citizens with limited digital skills is essential (see also Tai, Porumbescu, and Shon 2020). In the future, it could be interesting to conduct an experiment concerning online and offline opportunities for digital co-production and compare the outcomes in empirical settings.

Lember, Brandsen, and Tõnurist (2019, 1680) offer a scenario where *digital technologies will diversify co-production practices*. As the authors note, there are modes of co-production that are easily digitalized, but in some other forms the case may be the opposite (see also Dudau, Glennon, and Verschuere 2019; Larsson and Skjølsvik 2021). Greenhalgh et al. (2016, 417–418) also stress the importance of process governance and facilitation arrangements, emphasizing the whole co-creative process. Thus, the creation of digital and non-digital environments, where inclusion is considered throughout the whole co-production cycle can be succeeded by careful meta-design and facilitation of the process to address both the accessibility and interaction perspectives of inclusion. We bring this notion into co-production research and offer a valuable understanding of the interplay between design and inclusion in co-production by analysing micro-level events in a digital co-production process.

Conclusion

In this study we asked how design can enhance inclusion in digital co-production, more precisely, by studying how a systematically designed digital co-production process can help sustain and improve inclusion. Having a micro-level focus on the research, we have built understanding about principles that potentially thrive or hinder inclusion in the digital co-production process, depending on how they are considered in the design of the co-production process.

To sum up our core findings, the study underlines the importance of meta-design of the process as well as good facilitation. First, to increase inclusion, meta-design should cover the process from preparation to actual interaction between the participants. The research shows that inclusion dilemmas overlap

and expand throughout the digital co-production process, meaning that inclusion needs to be considered in the design of digital co-production and on a systemic level as a value in itself (see Dahl 1994; Nieuwenhuizen and Meijer 2021).

Then, what is specific about inclusion in *digital* co-production? The elements that differentiate digital and face-to-face co-production are the software and hardware used in digital co-production, and thus the different material environments and intimacy levels where the co-production happens.

A digital co-production event organizer should understand that 'digital' creates a different kind of complexity in the situation compared to an offline mode, starting from the technological skills of all parties, and the specific type of interaction environment where participants have an option to be present but with very limited visibility. The examined study illustrated a co-production process in which the individual events were originally designed to be face-to-face. By adding a digital layer, the organizers encountered challenges they were not necessarily prepared for.

Future research focusing on inclusion in digital co-production could also investigate different facilitation models and compare different software in digital co-production with different groups of citizens. We consider there is a need to extend the understanding of the opportunities presented by digital solutions that also take diverse citizen groups into account. The exclusion from digital co-production activities of groups with the greatest need for government services may become problematic. We suggest these groups require supplementary support and facilitation to ensure they can participate in co-production activities. Moreover, expanding the purview of research to include co-production design as a process enabling strategic public governance would help unveil the varying implications of digital co-production in public management settings.

We conclude the study with the notion that digital co-production is met with similar challenges with face-to-face co-production, but has additional element of technology that brings more complexity to the process. The process and its parts can be controlled to a certain extend by approaching it systemically through meta-design approach, but it still leaves a considerable responsibility to individual facilitators to be skilled enough to improvise and guide the interaction within digital dimension during the implementation. Even if digital co-production was implemented on an application without human facilitator-interaction, facilitation as an element remains, and it needs to be designed. The study agrees that digital co-production does not offer a quick fix for the democracy dilemmas related to inclusion and representation in co-production (see, Vanleene and Verschuere, 2018; Jakobsen and Calmar Andersen 2013). Nevertheless, careful design of the process could mitigate some challenges.

Note

1. Issue cards can be used to support the conversation around complex matters by breaking down the subject into physical cards and acting as prompts to suggest new interpretations of a problem and give different perspectives to the topic at hand. An issue card can contain, for example, an insight, a picture, a drawing, a keyword, or a description, based on the specific need (Stickdorn et al. 2008, 182). By simple texts and pictures, issue cards are an inclusive way to interpret discussion topics as there does not have to be a requirement to understand difficult language or terminology.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Housing Finance and Development Centre of Finland (ARA) and the Ministry of the Environment under the Finnish national Suburban Development Programme 2020–2022. There are no competing interests concerning this study.

References

Alam, Lubna Sultana. 2020. "Many Hands Make Light Work: Towards a Framework of Digital Co-Production to Co-Creation on Social Platforms." *Information Technology & People* 34 (3): 1087–1118. https://doi.org/10.1108/ITP-05-2019-0231.

Arnstein, S. R. 1969. "A Ladder of Citizen Participation." *Journal of the American Institute of Planners* 35 (4): 216–224. https://doi.org/10.1080/01944366908977225.

Beach, Derek. 2016. "It's All About Mechanisms – What Process-Tracing Case Studies Should Be Tracing." *New Political Economy* 21 (5): 463–472. https://doi.org/10.1080/13563467.2015.1134466 .

Bovaird, Tony, and Elke Loeffler, eds. 2015. *Public Management and Governance. 3rd* ed. London: Routledge. https://doi.org/10.4324/9781315693279.

Brandsen, Taco, and Marlies Honingh. 2016. "Distinguishing Different Types of Coproduction: A Conceptual Analysis Based on the Classical Definitions." *Public Administration Review* 76 (3): 427–435. https://doi.org/10.1111/puar.12465.

Brandsen, Taco, Trui Steen, and Verschuere Bram. 2018. *Co-Creation and Co-Production in Public Services: Urgent Issues in Practise and Research Brandsen, Taco, Steen, Trui, Verschuere, Bram Co-Production and Co-Creation: Engaging Citizens in Public Services* (pp. 3–8). New York: Routledge. https://doi.org/10.4324/9781315204956

Brannan, T., P. John, and Gerry Stoker. 2006. "Active Citizenship and Effective Public Services and Programmes: How Can We Know What Really Works?" *Urban Studies* 43 (5–6): 993–1008. https://doi.org/10.1080/00420980600676626.

Cepiku, D., Marta Marsilio, Mariafrancesca Sicilia, and Milena Vainieri. 2020. *The Co-Production of Public Services*. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-60710-4.

Clark, J. K. 2018. "Designing Public Participation: Managing Problem Settings and Social Equity." *Public Administration Review* 78 (3): 362–374. https://doi.org/10.1111/puar.12872.

Clark, Benjamin, Jeffrey Brudney, and Sung-Gheel Jang. 2013. "Coproduction of Government Services and the New Information Technology: Investigating the Distributional Biases." *Public Administration Review* 73 (5): 687–701. https://doi.org/10.1111/puar.12092.

Crisp, Beth, Taket Ann, Graham Melissa, and Hanna Lisa. 2013. "Implementing the Social Inclusion Agenda." In *Practising Social Inclusion*, edited by Ann Taket, Beth Crisp, Melissa Graham, Lisa Hanna, Sophie Goldingay, Linda Wilson, 249–256. Abingdon, England: Taylor & Francis Group.

Dahl, Robert. 1994. "A Democratic Dilemma: System Effectiveness versus Citizen Participation." *Political Science Quarterly* 109 (1): 23–34. https://doi.org/10.2307/2151659.

Dudau, Adina, Russ Glennon, and Bram Verschuere. 2019. "Following the Yellow Brick Road? (Dis) enchantment Withco-Design, Co-Production and Value Co-Creation in Public Services." *Public Management Review* 21 (11): 1577–1594. https://doi.org/10.1080/14719037.2019.1653604.

Eikeland, Olav. 2012. "Action Research - Applied Research, Intervention Research, Collaborative Research, Practitioner Research, or Praxis Research?." *International Journal of Action Research* 8 (1): 9–44. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-371155.

Eriksson, E. 2022. "Coproduction and Inclusion: A Public Administrator Perspective." *International Public Management Journal* 25 (2): 217–240. https://doi.org/10.1080/10967494.2021.1969486.

Falco, Enzo, and Reinout Kleinhans. 2018. "Digital Participatory Platforms for Co-Production in Urban Development: A Systematic Review." *International Journal of E-Planning Research (IJEPR)* 7 (3): 52–79. https://doi.org/10.4018/IJEPR.2018070105 .

Farr, Michelle. 2018. "Power Dynamics and Collaborative Mechanisms in Co-Production and Co-Design Processes." *Critical Social Policy* 38 (4): 623–644. https://doi.org/10.1177/0261018317747444.

Fledderus, Joost. 2015. "Does User Co-Production of Public Service Delivery Increase Satisfaction and Trust? Evidence from a Vignette Experiment." *International Journal of Public Administration* 38 (9): 642–653. https://doi.org/10.1080/01900692.2014.952825.

Flick, Uwe. 2004. "Triangulation in Qualitative Research." In *A Companion to Qualitative Research*, edited by Uwe Flick, Ernst von Kardorff, and Ines Steinke, 178–183. London: Sage Publications.

Fogli, Daniela. 2013. "Towards a New Work Practice in the Development of E-Government Applications." *Electronic Government, an International Journal* 10 (3/4): 238–258. https://doi.org/10.1504/EG.2013.058783.

Fogli, Daniela, and Loredana Parasiliti Provenza. 2012. "A Meta-Design Approach to the Development of E-Government Services." *Journal of Visual Languages & Computing* 23 (2): 47–62. https://doi.org/10.1016/j.jvlc.2011.11.003.

Franco, L. Alberto, and Mie Nielsen. 2018. "Examining Group Facilitation in Situ: The Use of Formulations in Facilitation Practice." *Group Decision and Negotiation* 27: 735–756. https://doi.org/10.1007/s10726-018-9577-7.

Fung, Archon. 2003. "Survey Article: Recipes for Public Spheres: Eight Institutional Design Choices and Their Consequences." *Journal of Political Philosophy* 11 (3): 338–367. https://doi.org/10.1111/1467-9760.00181.

Fung, Archon. 2015. "Putting the Public Back into Governance: The Challenges of Citizen Participation and Its Future." *Public Administration Review* 75 (4): 513–522. https://doi.org/10.1111/puar.12361.

Giaccardi, Elisa, and Gerhard Fischer. 2008. "Creativity and Evolution: A Metadesign Perspective." *Digital Creativity (Exeter)* 19 (1): 19–32. https://doi.org/10.1080/14626260701847456.

Greenhalgh, Trisha, Claire Jackson, Sara Shaw, and Tina Janamian. 2016. "Achieving Research Impact Through Co-Creation in Community-Based Health Services: Literature Review and Case Study." *The Milbank Quarterly* 94 (2): 392 392–429. https://doi.org/10.1111/1468-0009.12197 .

Hagedorn Krogh, Andreas. 2022. "Facilitating Collaboration in Publicly Mandated Governance Networks." *Public Management Review* 24 (4): 631–653. https://doi.org/10.1080/14719037.2020.1862288.

Hardyman, W., K. L. Daunt, and M. Kitchener. 2015. "Value Co-Creation Through Patient Engagement in Health Care: A Micro-Level Approach and Research Agenda." *Public Management Review* 17 (1): 90–107. https://doi.org/10.1080/14719037.2014.881539.

Hyysalo, Sampsa, Sofi Perikangas, Tatu Marttila, and Karoliina Auvinen. 2019. "Intermediate Codesigning in Transitions Governance: Catalysing and Channelling Participant Action." *Design Journal* 22 (6): 873–894. https://doi.org/10.1080/14606925.2019.1661557.

Jakobsen, Morten, and Simon Calmar Andersen. 2013. "Coproduction and Equity in Public Service Delivery." *Public Administration Review* 73 (5): 704–713. https://doi.org/10.1111/puar.12094.

Jalonen, Harri, and Tuomo Helo. 2020. "Co-Creation of Public Service Innovation Using Open Data and Social Media: Rhetoric, Reality, or Something in Between?" *International Journal of Innovation in the Digital Economy (IJIDE)* 11 (3): 64–77. https://doi.org/10.4018/IJIDE.2020070105.

Jaspers, Sylke, and Trui Steen. 2019. "The Sustainability of Outcomes in Temporary Co-Production." *International Journal of Public Sector Management* 33 (1): 62–77. https://doi.org/10.1108/IJPSM-05-2019-0124.

Jianbin, Wu, Linghao Zhang, and Xiangfang Ren. 2022. "Incorporating the Co-Creation Method into Social Innovation Design to Promote Intergenerational Integration: A Case Study of a Public Square." *International Journal of Environmental Research and Public Health* 19 (19). https://doi.org/10.3390/ijerph191912908.

Jönsson, Sten, and Kari Lukka. 2006. "There and Back Again: Doing Interventionist Research in Management Accounting." *Handbook of Management Accounting Research* 1 (1): 373–397. https://doi.org/10.1016/S1751-3243(06)01015-7.

Kjellström, Sofia. 2021. "Re-Shaping Physical and Digital Consumer and Participative Co-Production Processes: The Impact of Social Distancing During COVID-19." In *Processual Perspectives on the Co-Production Turn in Public Sector Organizations*, edited by Anja Overgaard Thomassen and Julie Borup Jensen, 216–236. Hershey, PA: IGI Global. https://doi.org/10.4018/978-1-7998-4975-9.ch012.

Kleinhans, Reinout, Enzo Falco, and Ian Babelon. 2022. "Conditions for Networked Co-Production Through Digital Participatory Platforms in Urban Planning." *European Planning Studies* 30 (4): 769–788. https://doi.org/10.1080/09654313.2021.1998387.

Lai, J., and Nicole O. Widmar. 2021. "Revisiting the Digital Divide in the COVID-19 Era." *Applied Economic Perspectives and Policy* 43 (1): 458–464. https://doi.org/10.1002/aepp.13104.

Langley, Ann, and Tsoukas Haridimos. 2011. "Introducing 'perspectives on Process Organization Studies." In *Process, Sensemaking, and Organizing, by Hernes, Tor, and Sally Maitlis, Eds.*, Tor Hernes and Sally Maitlis. edited by. Oxford: Oxford University Press. Oxford Scholarship Online, 2011. https://doi.org/10.1093/acprof:oso/9780199594566.003.0001.

Larsson, Karl Kristian, and Tale Skjølsvik. 2021. "Making Sense of the Digital Co- Production of Welfare Services: Using Digital Technology to Simplify or Tailor the Co-Production of Services." *Public Management Review* 1–18. https://doi.org/10.1080/14719037.2021.2010402.

Lawton Henry, S., S. Abou-Zahra, and K. White. *Accessibility, Usability, and Inclusion*. 2010.

Lazar, Jonathan, Daniel Goldstein, and Anne Taylor. 2015. *Ensuring Digital Accessibility Through Process and Policy*. Waltham, MA: Morgan Kaufmann.

Lee, Jooho, and Soonhee Kim. 2018. "Citizens' E-Participation on Agenda Setting in Local Governance: Do Individual Social Capital and E-Participation Management Matter?" *Public Management Review* 20 (6): 873–895. https://doi.org/10.1080/14719037.2017.1340507.

Lember, Veiko. 2018. "The Increasing Role of Digital Technologies in Co-Production and Co-Creation." In *Co-Production and Co-Creation Engaging Citizens in Public Services*, T. Brandsen, and T. Steen, eds. Routledge. https://doi.org/10.4324/9781315204956-16.

Lember, Veiko, Taco Brandsen, and Piret Tõnurist. 2019. "The Potential Impacts of Digital Technologies on Co-Production and Co-Creation." *Public Management Review* 21 (11): 1665–1686. https://doi.org/10.1080/14719037.2019.1619807.

Local Government Act, 410 §22. 2015. https://www.finlex.fi/fi/laki/ajantasa/2015/20150410

Lukka, Kari, and Eija Vinnari. 2017. "Combining Actor-Network Theory with Interventionist Research: Present State and Future Potential." *Accounting Auditing & Accountability Journal* 30 (3): 720–753. https://doi.org/10.1108/AAAJ-08-2015-2176.

Madden, Mary, Steph Morris, Margaret Ogden, David Lewis, Duncan Stewart, and Jim McCambridge. 2020. "Producing Co-Production: Reflections on the Development of a Complex Intervention." *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy* 23 (3): 659–669. https://doi.org/10.1111/hex.13046.

Makey, Laura, Claire Walsh, and Ifrah Salih. 2023. "Co-Production: What It is and How It Can Ensure Inclusive Practice for Service Users and Staff." *Nursing management* 30 (1): 18–23. https://doi.org/10.7748/nm.2022.e2046.

Meijer, Albert. 2015. "E-Governance Innovation: Barriers and Strategies." *Government Information Quarterly* 32 (2): 198–206. https://doi.org/10.1016/j.giq.2015.01.001.

Nabatchi, T. 2012. "Putting the 'Public' Back in Public Values Research: Designing Public Participation to Identify and Respond to Public Values." *Public Administration Review* 72 (5): 699–708. https://doi.org/10.1111/j.1540-6210.2012.02544.x.

Nieuwenhuizen, Wouter, and Albert Meijer. 2021. "ICT-Based Co-Production: A Public Values Perspective." In *The Palgrave Handbook of Co-Production of Public Services and Outcomes*, edited by Elke Loeffler and Tony Bovaird, 577–594. Cham, Switzerland: Palgrave Macmillan. https://doi.org/10.1007/978-3-030-53705-0_30.

Osborne, Stephen P., and Louise Brown. 2011. "Innovation, Public Policy and Public Service Delivery in the UK. The Word That Would Be King?" *Public Administration* 89 (4): 1335–1350. https://doi.org/10.1111/j.1467-9299.2011.01932.x.

Osborne, S., and K. Strokosch. 2013. "It Takes Two to Tango? Understanding the Co-Production of Public Services by Integrating the Services Management and Public Administration Perspectives." *British Journal of Management* 24, 31–47. https://doi.org/10.1111/1467-8551.12010

Pietilä, Ilkka, Niina Meriläinen, and Väänänen Kaisa. 2021. "Understanding youths' Needs for Digital Societal Participation: Towards an Inclusive." *Virtual Council Behaviour & Information Technology* 40 (5): 83–496. https://doi.org/10.1080/0144929X.2021.1912182.

Randma-Liiv, Tiina. 2022. "Adoption is Not Enough: Institutionalization of E-Participation Initiatives." *Public Policy and Administration*. 1–23. https://doi.org/10.1177/09520767211069199.

Rocha, Arlindo, Paula Schommer, Emiliana Debetir, and Daniel Moraes Pinheiro. 2021. "Structural Elements for the Co-Production of Public Goods: An Integrative Approach." *Cadernos EBAPE.BR* 19 (3): 538–551. https://doi.org/10.1590/1679-395120200110.

Rodriguez Müller, A. P., Cesar Casiano Flores, Valerie Albrecht, Trui Steen, and Joep Crompvoets. 2021. "A Scoping Review of Empirical Evidence on (Digital) Public Services Co-Creation." *Administrative Sciences* 11 (4): 130. https://doi.org/10.3390/admsci11040130.

Romme, A., L. Georges, and Albert Meijer. 2020. "Applying Design Science in Public Policy and Administration Research." *Policy & Politics* 48 (1): 149–165. https://doi.org/10.1332/030557319X15613699981234.

Rosen, Jovanna, and Gary Painter. 2019. "From Citizen Control to Co-Production." *Journal of the American Planning Association* 85 (3): 335–347. https://doi.org/10.1080/01944363.2019.1618727.

Rui, Mu, and Huanming Wang. 2022. "A Systematic Literature Review of Open Innovation in the Public Sector: Comparing Barriers and Governance Strategies of Digital and Non-Digital Open Innovation." *Public Management Review* 24 (4): 489–511. https://doi.org/10.1080/14719037.2020.1838787.

Schreier, Margit. 2014. "Qualitative Content Analysis." In *The SAGE Handbook of Qualitative Data Analysis*, edited by Uwe Flick, 170–184. London: SAGE Publications Ltd. https://doi.org/10.4135/9781446282243.n12.

Shaw, M. E. 1976. *Group Dynamics: The Psychology of Small Group Behavior*. 2nd ed. New York: McGraw-Hill.

Sicilia, Mariafrancesca, Alessandro Sancino, Tina Nabatchi, and Enrico Guarini. 2019. "Facilitating Co-Production in Public Services: Management Implications from a Systematic Literature Review." *Public Money & Management* 39 (4): 233–240. https://doi.org/10.1080/09540962.2019.1592904.

Stickdorn, Mark, Markus Edgar Hormess, Adam Lawrence, and Ans Jakob Schneider. 2008. *This is Service Design Doing: Applying Service Design Thinking in the Real World*. Sebastopol, CA: O'Reilly.

Strokosch, K., and S. P. Osborne. 2016. "Asylum Seekers and the Co-Production of Public Services: Understanding the Implications for Social Inclusion and Citizenship." *Journal of Social Policy* 45 (4): 673–690. https://doi.org/10.1017/S0047279416000258.

Tai, Kuang-Ting, Gregory Porumbescu, and Jonghim Shon. 2020. "Can E-Participation Stimulate Offline Citizen Participation: An Empirical Test with Practical Implications." *Public Management Review* 22 (2): 278–296. https://doi.org/10.1080/14719037.2019.1584233.

Taket, Ann, B. R. Crisp, Graham Melissa, Hanna Lisa, and Goldingay Sophie. 2013. "Scoping Social Inclusion Practice>". In *Practising Social Inclusion*, In edited by. Ann Taket, et al., 3–41. Taylor & Francis Group. https://doi.org/10.4324/9780203766798.

Trischler, Jakob, Simon J. Pervan, Stephen J. Kelly, and Scott Don R. 2018. "The Value of Codesign: The Effect of Customer Involvement in Service Design Teams." *Journal of Service Research* 21 (1): 75–100. https://doi.org/10.1177/1094670517714060.

Tuurnas, Sanna. 2021. "Skilling and Motivating Staff for Co-Production." In *The Palgrave Handbook of Co-Production of Public Services and Outcomes*, edited by Löffler bu Elke and Tony Bovaird, 491–506. Cham, Swizerland: Palgrave Macmillan. https://doi.org/10.1007/978-3-030-53705-0_25.

Vaajakallio, Kirsikka. 2012. *Design Games as a Tool a Mindset and a Structure*. Helsinki: Aalto University Press.

Vanleene, Daphne, and Verschuere Bram. 2018. "Co-Production in Community Development." In *Co-Production and Co-Creation : Engaging Citizens in Public Services*, edited by. Taco Brandsen, Trui Steen, and Bram Verschuere, 198–207. Routledge. https://doi.org/10.4324/9781315204956-31.

Voorberg, William, V. Bekkers, and L. Tummers. 2015. "A Systematic Review of Co-Creation and Co-Production: Embarking on the Social Innovation Journey." *Public Management Review* 17 (9): 1333–1357. https://doi.org/10.1080/14719037.2014.930505.

Zou, Yonghua, and Wanxia Zhao. 2021. "Neighbourhood Governance During the COVID-19 Lockdown in Hangzhou: Co-Production Based on Digital Technologies." *Public Management Review* 24 (12): 1914–1932. https://doi.org/10.1080/14719037.2021.1945666.