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Toward Sustainability: A Service Design Approach for Climate Action through Plogging-inspired Trash Grabber Rental Service

– Case of Nurmijärvi Municipality Environmental Division

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The "climate crisis" is a global challenge that has heightened awareness of environmental concerns, though dedication to addressing it varies across individuals, organizations, and governments. One simple yet impactful action is picking up trash, which raises awareness and motivates individuals to address environmental issues. In Finland, libraries offer a trash-picker rental service ("Lainaa roskapihdit kirjastosta"), providing hygienic, safe, and ergonomic tools for trash collection during activities like plogging. Despite its availability for up to five years, adoption remains limited.

This thesis, in collaboration with Nurmijärvi Municipality's Environmental Division, examines the trash-grabber rental service in Nurmijärvi libraries and aims to expand it into a more accessible and comprehensive offering. The goal is to raise awareness and enable citizens to easily engage in activities like traditional cleaning initiatives (Siistiksi) and spontaneous plogging. Research methods include desk research, ethnography, customer journey mapping, surveys, interviews, and stakeholder co-creation.

Findings suggest the service can encourage small, practical actions to combat the climate crisis. Proposed strategies include: 1) Strengthening promotion to attract users, 2) Expanding rental locations for better accessibility, and 3) Positioning the service as a sustainable travel tool.

Through service design, this thesis re-imagines the trash-picker rental service, proposing a model to enhance functionality and impact. By increasing awareness and accessibility, the service can empower individuals to take tangible action within their communities and beyond.

Keywords:

Plogging, climate action, cleaning campaign, library service, trash grabber, trash bag, trash activism, sustainable travel, service design, citizen participation

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Kohti kestävyttä: Palvelumuotoilullinen lähestymistapa ilmastotoimiin Plogging-roskapihdien vuokrauspalvelun kautta

- Case Nurmijärven kunta

"Ilmastokriisi" on globaali haaste, joka on lisännyt ympäristötietoisuutta, vaikka sitoutuminen sen ratkaisemiseen vaihtelee yksilöiden, organisaatioiden ja hallitusten välillä. Yksi yksinkertainen mutta vaikuttava teko on roskien kerääminen, joka lisää tietoisuutta ja motivoi ihmisiä toimimaan ympäristöasioiden hyväksi. Suomessa kirjastoista voi vuokrata roskapihtejä ("Lainaa roskapihdit kirjastosta"), jotka tarjoavat hygieenisiä, turvallisia ja ergonomisia välineitä roskien keräämiseen esimerkiksi ploggingin yhteydessä. Vaikka palvelu on ollut saatavilla jopa viiden vuoden ajan, sen käyttöaste on jäänyt alhaiseksi.

Tämä opinnäytetyö, yhteistyössä Nurmijärven kunnan ympäristöosaston kanssa, tutkii roskapihdit vuokrauspalvelua Nurmijärven kirjastoissa ja pyrkii laajentamaan sen saavutettavuutta ja kokonaisvaltaisuutta. Tavoitteena on lisätä tietoisuutta ja mahdollistaa asukkaille osallistuminen helposti esimerkiksi perinteisiin siivouskampanjoihin (Siistiksi) ja spontaaniin ploggaukseen. Tutkimusmenetelmiin kuuluvat kirjallisuuskatsaus, etnografia, asiakaspolun kartoitus, kyselyt, haastattelut ja sidosryhmien yhteiskehittäminen.

Tulokset osoittavat, että palvelu voi kannustaa pieniin, käytännöllisiin tekoihin ilmastokriisin torjumiseksi. Ehdotetut strategiat sisältävät: 1) Palvelun näkyvyyden ja markkinoinnin tehostamisen uusien käyttäjien houuttelemiseksi, 2) Vuokrauspisteiden lisäämisen saavutettavuuden parantamiseksi ja 3) Palvelun brändäämisen kestävä matkailun välineeksi.

Palvelumuotoilun avulla tämä opinnäytetyö uudistaa roskapihdit vuokrauspalvelua ja esittää mallin sen toiminnallisuuden ja vaikutusten parantamiseksi. Tietoisuuden ja saavutettavuuden lisäämisen kautta palvelu voi antaa yksilöille mahdollisuuden toteuttaa konkreettisia ympäristötekoja omassa yhteisössään ja sen ulkopuolella.

Avainsanat:

Plogging, ilmastotoimet, siivouskampanja, kirjastopalvelu, roskapihdit, roskapussi, roska-aktivismista, kestävä matkailu, palvelumuotoilu, kansalaisten osallistuminen

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1 Introduction

- In the era of climate change, what are you doing for future generations?

Awareness can be increased with small actions. -

Humanity is currently confronted with an unprecedented environmental crisis, widely known as the "climate crisis," which poses complex, far-reaching threats to life on Earth. This crisis manifests in forms, including global warming, extreme weather events, biodiversity loss, and rising sea levels—each with profound implications for ecosystems, human health, and global stability (European Commission, n.d.). With growing public awareness of these environmental challenges, advocates like Greta Thunberg and movements such as Fridays for Future have galvanized communities worldwide, pressing for urgent climate mitigation measures (United Nations, 2019). However, levels of public engagement vary, with some communities deeply committed to environmental efforts, while others remain unsure of how to contribute meaningfully to climate action.

Trash also has been exacerbating climate change. Globally, trash is a significant cause threatening the Earth's environment and ecosystems. Over two billion metric tons of unsustainable, human-generated waste are thrown away globally every year, with inadequate disposal practices leading to pollution, habitat degradation, and harm to wildlife (Earth Day Network, 2024). Among the immediate and actionable areas in the fight against climate change is waste management, which, despite its critical importance, often receives less attention. Mismanaged waste pollutes both marine and terrestrial environments, introduces toxins into soil and water, and disrupts the visual and ecological balance of public spaces (European Commission, n.d.). Addressing waste management requires a coordinated approach at multiple levels, involving local governments, environmental agencies, and citizens (Routio, J, 2024).

According to the United Nations' Emissions Gap Report 2021, over 97% of people think environmental issues are severe, emphasizing the critical need for immediate action to mitigate the climate crisis (UNEP, 2021). However, turning this awareness into action is not straightforward. While people acknowledge concerns about climate change, the level of dedication and action towards environmental protection varies. There are practical actions for environmental protection at the individual and household levels, such as waste separation, energy conservation, and purchasing eco-friendly vehicles. Among these actions, one of the simplest is picking up trash. Picking up trash may not directly solve the trash problem, but it serves as a starting point for individuals to recognize and understand environmental issues and ignite interest and change regarding the climate crisis when facing trash on the streets. Ironically, trash pick-up is not a new concept, yet despite its simplicity, it is challenging to find individuals who actively pick up trash on the streets. "In fact, people look to the people around them to determine how they will behave." According to studies by behavioral psychologists (Hogg *et al.*, 2018), the more people act, the more people follow them. This study focuses on the process by which residents take action to make small changes in their daily lives to solve the climate crisis.

Citizen engagement not only leads to cleaner communities but also fosters a shared ethic of responsibility and care for the planet (NetZeroCities, 2024). Small individual actions—such as spending minutes each day collecting trash—can have significant benefits for the local and global environment. Increasing engagement requires accessible tools and systems that empower more people to contribute to waste management efforts, promoting a community culture of environmental stewardship. In other words, if there were a system to transform citizens' "willingness" into "action," they would gladly strive for the betterment of their community and the planet.

1.1 Commissioner

In Finland, various municipalities have been taking proactive steps to implement community-driven initiatives that promote cleaner, healthier environments.

Nurmijärvi Municipality, located in southern Finland, is one of the leaders in these efforts, demonstrating a strong commitment to environmental responsibility and sustainability. The Environmental Division of Nurmijärvi Municipality plays a key role in driving various sustainability-focused programs that emphasize community involvement, especially in the areas of waste management and public cleanliness. These initiatives are designed to empower residents to actively engage in local cleanup activities, improving the quality of their surroundings while fostering a collective sense of environmental responsibility.

One of the Environmental Division's flagship initiatives is the *Siistiksi* project (Figure 1), which is central to Nurmijärvi's broader climate agenda. This project aligns with other programs such as the Sustainable Lifestyle Accelerator, which educates residents about sustainable living, and the annual Cleanup Campaign, which mobilizes community members for neighborhood cleanups. Through these efforts, the Environmental Division aims to raise environmental awareness and inspire residents to take concrete actions that support a more sustainable and cleaner community (Nurmijärvi Municipality, 2023).

In addition to these internal initiatives, the Environmental Division collaborates closely with local organizations, including libraries, schools, and community groups, to broaden its reach. For example, a partnership with Klaukkala Library allows residents to borrow trash grabbers for community cleanups, facilitating greater citizen engagement in waste management. This partnership is a practical demonstration of how local libraries and community centers can serve as pivotal points for fostering environmental action and promoting sustainable behavior. The Environmental Division works alongside these third-sector partners to support the *Siistiksi* project, creating cleaner public spaces and establishing best practices for sustained community involvement in environmental stewardship (Salsabila *et al.*, 2023).

By commissioning this master's thesis, the Environmental Division of Nurmijärvi Municipality aims to explore effective strategies for increasing citizen

participation in waste management activities, thereby contributing to broader environmental and climate goals. This study will offer valuable insights into how public engagement can be strengthened and provide actionable recommendations to expand the impact of the *Siistiksi* project and similar community initiatives (Jansson, 2022, Appendix 1).

1.2 Thesis background and focus

In Finland, the Trash Grabber Rental Service, known as *Lainaa roskapihdit kirjastosta* (borrow a trash grabber from the library), allows residents to borrow trash grabbers from local libraries to participate in community clean-up activities. This service emerged as a practical tool designed to engage individuals interested in environmental issues, providing an accessible entry point for those unsure of how to contribute to local environmental efforts. Operated by Finnish municipal environmental departments in collaboration with volunteer groups, the service aims to foster greater public participation in maintaining clean public spaces and reducing waste (Finnish Ministry of the Environment, 2024).

Launched in April 2023 by the Environmental Division of Nurmijärvi Municipality, the Trash Grabber Project offers residents access to trash grabbers via local libraries, enabling them to engage in trash collection. As part of the initiative, 12 grabbers were purchased and distributed across the region's three main libraries: the Main Library, Klaukkala Library, and Rajamäki Library, as well as the mobile library (a bus). This project is closely aligned with Nurmijärvi Municipality's broader climate strategy, which prioritizes goals such as carbon neutrality and waste reduction. By providing trash grabbers, the project seeks to inspire residents to take an active role in maintaining local cleanliness and fostering a sense of shared environmental responsibility.

In addition to these municipal efforts, the project is part of Nurmijärvi's broader *Siistiksi* initiative, which focuses on promoting sustainable practices and environmental awareness within the community (Nurmijärvi Municipality, 2023). This thesis aims to contribute to expanding the impact of the Trash Grabber

Project (Figure 1) by exploring strategies to increase community engagement in waste management and trash reduction.

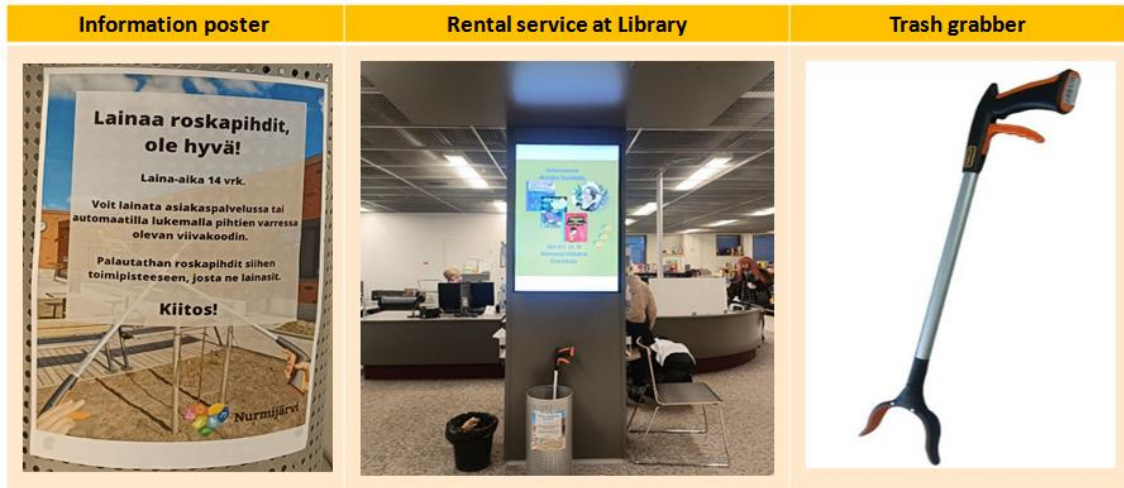


Figure 1. Trash grabber project in library

Despite being implemented in several Finnish libraries over the past 1 to 5 years, the trash grabber rental service has yet to be widely adopted by residents. According to statistics from Nurmijärvi Libraries in 2023, a total of only 36 loans were made across the three libraries during that year. This indicates an opportunity to improve the project's reach and effectiveness, particularly by enhancing awareness and accessibility. The goal of this thesis is to examine how to raise public awareness about the service and explore strategies for encouraging broader participation.

From the thesis author's experience, she first encountered the trash grabber rental service at Klaukkala Library in June 2023. Inspired by this opportunity, the thesis author and her family began participating in plogging—a combination of jogging and trash picking—using the trash grabber. This experience has underscored the value of the trash grabber, not only as an essential tool for raising environmental awareness but also as a simple, accessible, and flexible means of engaging in climate action. The ability to pick up trash anytime and anywhere, unrestricted by time or location, makes this activity an approachable form of environmental stewardship (UNEP, 2018).

The low adoption rate of the service, despite its potential, suggests a need for strategies to activate broader community participation. This thesis explores how to promote the trash grabber rental service to a wider audience and create an environment where more residents are motivated to engage in these activities.

The research will focus on improving the service's reach by considering factors such as increasing awareness of the service, enhancing its accessibility, and encouraging residents to incorporate trash picking into their daily routines. This can be achieved through the use of service design tools and methods, which will help identify potential barriers to participation and propose solutions. The thesis will also examine how to integrate these services into a broader environmental culture, making it easier for citizens to participate in trash-picking activities like plogging, wherever and whenever they choose.

Ultimately, the objective of this thesis is to contribute to the expansion of the trash grabber rental service and make it a more inclusive and appealing tool for community-based environmental action. Through this research, the aim is to establish a convenient, engaging, and sustainable culture where residents can participate in climate-positive activities such as trash collection and plogging, reducing environmental impact in a practical and accessible way. As little as 10 minutes of trash picking per day can significantly reduce the trash that damages our environment, making every small effort count toward a cleaner, healthier community.

1.3 Thesis goals and research question

This thesis aims to deepen the understanding of how to increase citizen engagement in sustainable waste management practices, using the trash grabber rental service as a focal point. The research will explore various dimensions of community involvement, examining how such a service can be expanded and made more accessible to a broader audience. The main objectives of this research are to:

- Explore Strategies for Participation: Identify methods to improve library visitor awareness and encourage higher participation rates in the trash grabber rental service. This involves understanding the barriers preventing wider use of the service and identifying ways to overcome them.
- Collaborate with Service Stakeholders: Work alongside local service providers and municipal authorities to develop practical, scalable solutions that optimize the trash grabber rental system. This will help ensure that the service is not only sustainable but also meets the needs of residents and aligns with broader environmental goals.
- Promote Environmental Education: Position the service as an educational tool for fostering environmental responsibility, especially among children and younger generations. The aim is to make environmental stewardship a natural part of daily life, particularly in engaging future generations with sustainable practices.

In line with these goals, the following research questions will guide the thesis:

- Q1: Awareness: How well are residents aware of the trash grabber rental service available at local libraries? This question seeks to assess the general public's familiarity with the service and identify gaps in awareness that may hinder its adoption.
- Q2: Utilization: How can residents more effectively utilize the trash grabber rental service? The focus of this question is on the barriers and challenges that residents face in utilizing the service and how it can be better promoted to encourage regular use.
- Q3: Expansion: What strategies can broaden the service's reach and support more effective community waste management? This question explores ways to expand the service's impact, both in terms of increasing the number of participants and enhancing the overall effectiveness of the service within the community.

Through these research questions, the study will apply a user-centered approach, seeking to enhance resident satisfaction while creating mutually

beneficial outcomes for both service providers and users. The goal of this thesis is to foster collaboration between service providers, local authorities, and residents, resulting in a sustainable waste management solution that benefits all stakeholders. By examining both the practical and educational dimensions of the trash grabber service, the thesis aims to contribute to the development of a more engaged and environmentally responsible community in Nurmijärvi.

1.4 Frame of Reference

This section provides an outline of the central themes and theories relevant to this research, establishing a framework for examining the Trash Grabber Project within the *Siistiksi* initiative. The frame of reference (Figure 2) includes a range of concepts that shape the approach to understanding the potential of environmental actions, specifically Plogging, as tools for climate action, community engagement, and sustainable urban practices (Borden *et al.*, 2020). The purpose of this framework is to identify how various elements contribute to increased environmental responsibility among residents and to the effectiveness of citizen-driven waste management initiatives.

Key areas within this frame of reference include:

- **Climate Action and Consumer Behavior:** Exploring how individual behaviors contribute to climate action and how sustainable practices, such as trash collection, can shift consumer habits toward environmental stewardship.

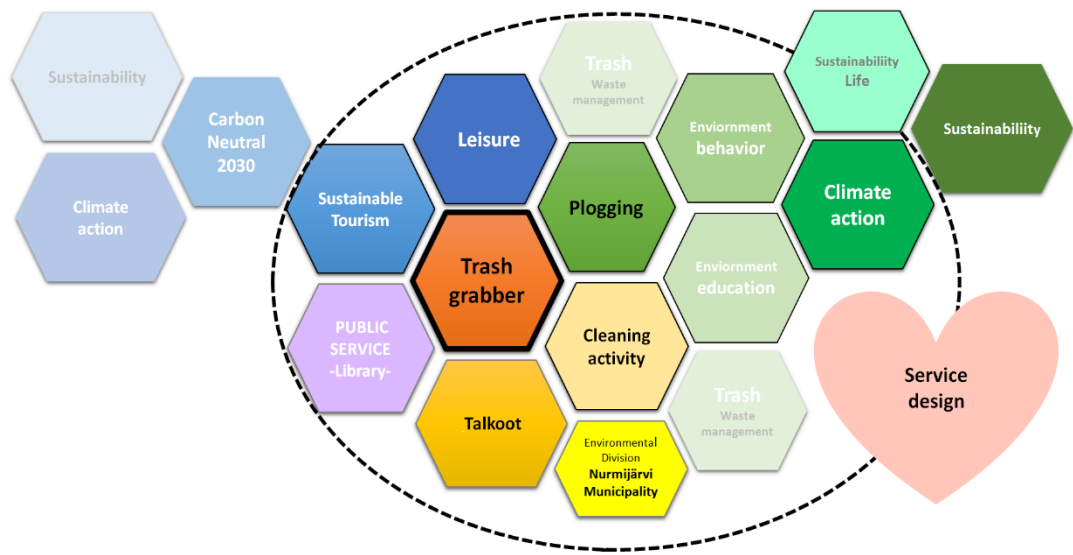


Figure 2. Frame of reference

- **Plogging:** This concept centers on the practice of picking up trash while jogging or walking, combining fitness with environmental responsibility. The background, benefits, and potential to promote a culture of cleanliness and care for shared spaces are analyzed.
- **Leisure:** Here, the thesis examines casual and serious leisure, looking into whether Plogging can be perceived as a leisure activity that fosters increased participation. By framing Plogging as leisure, the aim is to explore how it might appeal to diverse groups, integrating environmental action into daily life in a way that is both enjoyable and impactful.
- **Child Development and Early Learning in Environmental Education:** This section explores Finland's early education model, which emphasizes learning through play, to determine if Plogging can serve as a playful, hands-on introduction to environmental responsibility for children. By embedding these values early, the goal is to encourage lifelong habits of environmental awareness and care.
- **Sustainable Tourism:** Sustainable tourism encompasses not only concern for environmental, social, and economic factors but also aims to enhance the experiences of tourists and address the needs of host communities. This concept is examined to assess how community-driven cleanliness initiatives,

like Plogging, can enrich the experience of local tourism and strengthen community pride and environmental quality.

- **Design Thinking and Service Design Tools:** This segment delves into design thinking and service design methodologies. Design thinking, with its human-centered approach, emphasizes creative solutions that align with user needs. Within this research, service design tools offer methods for structuring community services—like the trash grabber rental system—in a way that maximizes accessibility, engagement, and sustainability.

This frame of reference serves to highlight the interconnectedness of the Trash Grabber Project within broader climate action efforts. Each element illustrates the potential of the trash grabber initiative to foster urban sustainable practices, translating environmental awareness into actionable behaviors that enhance community wellbeing.

1.5 Thesis Structure

The thesis is structured into 7 chapters, each addressing a specific aspect of the research process (Figure 3) related to service design and environmental sustainability.

Chapter 2: Theoretical Background lays the foundation for the research by providing an in-depth exploration of the concepts that support the development of the proposed service. This chapter covers five key topics: Climate Action, Plogging, Environmental Education, Sustainable Tourism, and Service Design and Design Thinking. Each section discusses the theoretical underpinnings of these areas, examining their relevance to the study and the design of an environmentally conscious service.

Chapter 3: Service Design Process - Discover outlines the research methods used to explore the existing context and understand user needs. This chapter includes Desk Research, which investigates the situation of plogging in Finland and Nurmijärvi's local climate initiatives. Service Safari explores existing services, such as trash grabber rentals, and personal involvement in activities

like Plogging with families. The chapter also presents findings from Auto-Ethnography, User Journey Mapping, Benchmarking, Interviews, and Surveys, which collectively provide insights into users' behaviors, preferences, and challenges. The chapter concludes with an Overview of Discover, summarizing key findings from these research methods.

Chapter 4: Service Design Process - Define focuses on synthesizing the information gathered in the Discover phase to create a clear definition of the service. This chapter includes the development of a Stakeholder Map, identification of key Personas, and the creation of a Customer Journey Map to highlight the experiences and pain points of potential users. The chapter also presents the Business Model Canvas, which helps outline the strategic aspects of the service concept.

Chapter 5: Service Design Process - Develop presents the creative phase of the research, where service concepts are ideated, prototyped, and refined. This chapter begins with Service Concept Ideation, followed by the creation of a refined Service Concept. The Service Prototype Test is presented, detailing the process of testing and iterating the service design based on user feedback. The chapter also includes Co-Creation efforts, incorporating feedback from key stakeholders such as the library, commissioner, and tourism experts to further enhance the service concept.

Chapter 6: Service Design Process - Deliver presents the final version of the service concept, along with recommendations for its implementation. The Final Service Concept is explained, and the Final Service delivery plan is discussed, detailing the process and impact of the service on climate action and community engagement.

Chapter 7: Conclusion wraps up the thesis by summarizing the entire research process, discussing the key findings, and presenting the final service concept. This chapter also addresses the limitations of the study and offers Recommendations for future research and improvements to the service design.

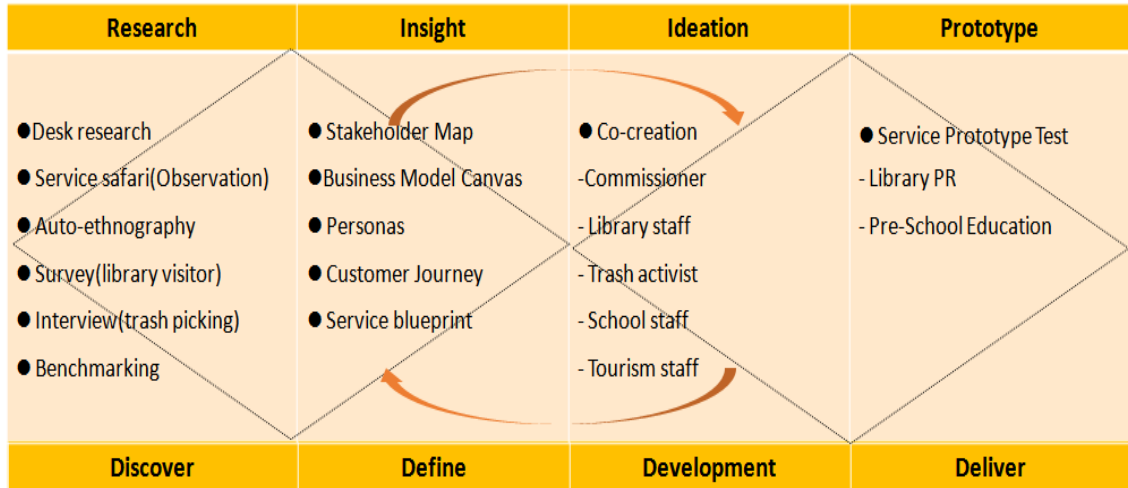


Figure 3. Thesis process: Double Diamond

2 THEORETICAL BACKGROUND

This chapter outlines the theoretical foundations that inform the research, starting with Climate Action and its relevance to sustainable practices. It then introduces Plogging as a growing activity that merges fitness with environmental responsibility, followed by discussions on Environmental Education and Sustainable Tourism. These concepts collectively provide the basis for the service design approach explored in later sections.

2.1 Climate Action of Individuals

Climate action involves efforts to mitigate climate change and adapt to its impacts, addressing the climate emergency driven primarily by human activities, such as greenhouse gas emissions (IPCC, 2021). Immediate, multi-level action is crucial to prevent catastrophic outcomes and ensure a sustainable future. Governments, businesses, and individuals each play key roles in this crisis.

Governments create policies, set emission targets, implement carbon taxes, and promote renewable energy, supported by international agreements like the Paris Agreement, which aims to limit global warming to well below 2°C (UNFCCC, 2015). Businesses drive innovation in sustainable solutions, responding to green consumer demand and offering opportunities for individuals to make responsible choices (Porter *et al.*, 2011).

At the individual level, climate action is reflected in lifestyle choices, community engagement, and advocacy. Personal actions like reducing energy consumption, using renewable energy, and minimizing waste contribute to lowering carbon footprints (IPCC, 2021). Community involvement in initiatives such as clean-ups or tree planting strengthens collective sustainability efforts (Ostrom, 2010). Advocacy through activism raises awareness and pressures governments and businesses to adopt effective climate policies (UNEP, 2020).

However, individuals face barriers to climate action, including psychological, social, educational, and economic challenges. Psychological factors like attitudes and values influence sustainable behavior (Colvin *et al.*, 2021), and theories like the Theory of Planned Behavior (Ajzen, 1991) and Cognitive Dissonance Theory (Festinger, 1957) offer insights into how individuals align behaviors with values. Social factors, such as norms and peer influences, can either promote or inhibit climate-friendly actions (Nolan, 2021). Education plays a vital role in fostering sustainability awareness (Wu *et al.*, 2021), and economic factors like financial incentives impact the feasibility of sustainable choices (Grossman *et al.*, 1995).

To overcome barriers, both structural and motivational factors must be addressed. Education, infrastructure, and supportive policies are essential for enabling sustainable actions. Social support networks are effective in reinforcing these behaviors, as individuals are more likely to adopt sustainable practices when supported by family and peers (Goldberg *et al.*, 2020). Educational initiatives aligned with Sustainable Development Goal 13 promote climate mitigation and adaptation, encouraging grassroots actions that contribute to global sustainability (Tosun *et al.*, 2017).

In conclusion, while governments and businesses play essential roles, individuals are key agents of change in combating climate change. Through informed choices, community engagement, and advocacy, individuals can influence societal norms and demand sustainable practices. Addressing barriers to action and creating supportive environments will maximize the impact of individual efforts, emphasizing the importance of collective action in mitigating climate change.

2.2 Plogging

Plogging, an eco-friendly fitness activity originating in Sweden around 2016, combines jogging with trash collection. The term "Plogging" derives from the Swedish words *plockaupp* (to pick up) and jogging (Eriksson *et al.*, 2017).

Globally recognized, it enhances personal health, protects the environment, and fosters community well-being, offering a holistic approach to wellness and environmental stewardship.

Plogging integrates insights from environmental psychology, public health, and physical fitness. Environmental psychology examines the interaction between individuals and their environments. As a pro-environmental behavior, Plogging is motivated by the desire to improve local spaces (Thøgersen, 2018). It promotes environmental stewardship, encourages eco-friendly habits through behavioral influence, and strengthens emotional bonds with communities. From a public health perspective, Plogging merges physical activity with community service, benefiting both personal and societal well-being. It supports cardiovascular health, muscle strength, and flexibility through movements like bending and squatting. Outdoor activities such as Plogging reduce stress and anxiety while enhancing self-esteem and community quality of life. Additionally, it minimizes health hazards associated with trash, such as sharp objects or toxic materials (Raghavan, 2020). In terms of physical fitness, Plogging offers functional training through varied movements that improve coordination, caloric expenditure through its interval nature, and flexibility that reduces injury risks (Raghavan, 2020).

Plogging fosters social interaction and raises environmental awareness, often performed in groups that strengthen community ties. As an educational tool, it inspires sustainable habits and teaches environmental responsibility. However, barriers such as perceptions of trash being "dirty" or "unpleasant" may deter participation. Addressing these challenges can broaden its appeal and amplify its role in environmental activism (Eriksson *et al.*, 2017). Plogging serves as an educational activity, especially for younger participants. Integrated into educational programs, it promotes physical fitness and environmental responsibility. Studies (Martínez-Mirambell *et al.*, 2023) indicate heightened environmental awareness among students involved in Plogging. Engaging children and families in Plogging foster habits with long-term environmental and physical benefits, reinforcing intergenerational values of sustainability.

2.3 Environmental Consumer Behavior Theory

Environmental consumer behavior addresses the conscious decisions individuals make to reduce their environmental footprint. This behavior stems from a combination of personal values, societal norms, and environmental awareness (Schultz, 2000). By understanding the underlying psychological and social mechanisms, individuals and organizations can foster environmentally responsible practices.

The Theory of Reasoned Action provides a framework to explain how attitudes and subjective norms influence behavioral intentions (Ajzen *et al.*, 1980). In environmental contexts, individuals who value sustainability and perceive social approval for green behaviors are more likely to act in environmentally conscious ways. For example, TRA has been used to predict behaviors such as recycling (Goldenhar *et al.*, 1993), energy conservation (Abrahamse *et al.*, 2005), and green purchasing (Vermeir *et al.*, 2008). When aligned with strong norms and personal values, these intentions translate into consistent eco-friendly actions.

Ethical consumption is a crucial aspect of environmental consumer behavior. It involves making choices that align with moral values, such as opting for fair-trade, cruelty-free, or biodegradable products (White *et al.*, 2019). This shift toward conscious consumption emphasizes the consumer's role as an agent of change in combating environmental degradation. Campaigns promoting ethical consumerism have proven effective when combined with public education and incentives (Carrington *et al.*, 2010).

Despite growing awareness, barriers such as lack of access to sustainable products, cost concerns, and skepticism about corporate green-washing hinder progress (Leonidou *et al.*, 2013). Addressing these challenges requires a multifaceted approach, including better labeling, affordability, and transparent communication about product impacts. Policymakers and businesses can play a pivotal role by ensuring sustainability is integrated into mainstream practices.

2.4 Environmental Education for Children

Environmental education for children has emerged as a cornerstone for fostering long-term sustainability. By equipping young minds with knowledge, skills, and attitudes, such education lays the groundwork for environmentally responsible behavior across generations. The formative years are critical for instilling environmental values. Studies suggest that environmental attitudes shaped during childhood significantly influence behaviors in adulthood (Dunlap *et al.*, 1978; Stern, 2000). Introducing children to topics like recycling, water conservation, and pollution control through age-appropriate methods helps cultivate a sense of stewardship.

Experiential learning is particularly impactful in environmental education. Activities like planting trees, cleaning beaches, or participating in citizen science projects offer hands-on experiences that strengthen the connection between knowledge and action (Kolb, 1984). For instance, students involved in wildlife preservation programs report heightened awareness and empathy toward biodiversity (Ballantyne *et al.*, 2002). To maximize impact, environmental education should be integrated into school curricula, encompassing science, geography, and social studies. Beyond the classroom, community-based initiatives, such as eco-clubs and field trips, reinforce lessons and build a culture of responsibility. Research highlights the effectiveness of programs that combine theoretical learning with practical activities, fostering not just understanding but commitment (Monroe *et al.*, 2019). Engaging children in environmental education has far-reaching implications. By influencing their immediate behavior, it also shapes familial practices and community norms. Parents and siblings often adopt sustainable habits introduced by young family members, creating a ripple effect of environmental awareness (Chawla, 1998).

2.5 Leisure theory

Leisure activities, though traditionally associated with relaxation, can play a significant role in fostering environmental awareness and personal well-being. By aligning leisure pursuits with sustainability goals, individuals can derive both

enjoyment and a sense of purpose. Leisure encompasses a spectrum of activities ranging from casual to serious (Stebbins, 1997). Casual leisure, such as walking in a park, provides immediate gratification with minimal effort. In contrast, serious leisure, like hiking or engaging in nature photography, involves commitment and skill development, offering deeper satisfaction and personal growth. The leisure constraints model identifies factors that inhibit participation in leisure activities (Crawford *et al.*, 1987). For environmental leisure pursuits, intrapersonal constraints might include a lack of confidence or awareness, interpersonal constraints could involve insufficient social support, and structural barriers may relate to accessibility or costs (Jackson, 2000).

Plogging exemplifies the integration of leisure and environmental action. By combining physical exercise with community service, it transforms a routine activity into an impactful endeavor. Participants report enhanced mental well-being, a sense of achievement, and stronger community ties, illustrating the potential of eco-friendly leisure activities to contribute to societal and environmental health (Eriksson *et al.*, 2017). To leverage leisure for environmental benefits, stakeholders must address constraints and enhance accessibility. Public parks, green spaces, and community programs should promote activities that align leisure with ecological stewardship (Brymer *et al.*, 2010). By fostering habits like Plogging or nature-based hobbies, individuals can experience both personal enrichment and contribute to sustainability.

2.6 Sustainable Tourism

Sustainable tourism aims to develop and manage tourism activities that minimize environmental impacts, support local economies, and respect cultural heritage (Honey, 2008). It strives to balance the needs of travelers with the preservation of natural and cultural resources for future generations. In response to climate change and growing environmental awareness, both travelers and the tourism industry are adopting more sustainable practices (Gössling *et al.*, 2019).

Key to sustainable tourism is the protection of ecosystems and biodiversity by managing human activities in sensitive areas (Scheyvens, 1999). Measures such as limiting visitor access, promoting eco-friendly infrastructure, and supporting reforestation projects help address issues like soil erosion, water management, and species protection. Airlines, for instance, have implemented carbon offset programs, and accommodations are adopting digital solutions to reduce waste and eliminate single-use plastics (UNWTO, 2019). These actions align with the climate-conscious attitudes of today's travelers (Weaver, 2006). Economic sustainability ensures that tourism benefits local communities. Supporting small businesses, like local guides and family-run accommodations, directs tourist spending to residents rather than external corporations (Ashley *et al.*, 2002). Unlike mass tourism, sustainable tourism emphasizes resource longevity and community resilience, fostering steady growth and reducing economic disruptions (Bramwell *et al.*, 2011). Cultural sustainability also plays a key role by promoting respectful interactions between tourists and local communities. Activities such as local festivals and artisan workshops enhance tourists' experiences while strengthening cultural vitality in the host communities (Richards, 2018). Involving residents in tourism planning aligns tourism with local priorities and strengthens social cohesion (Scheyvens, 1999).

However, sustainable tourism faces challenges. Eco-friendly infrastructure, like solar-powered resorts, requires high upfront investments (Weaver, 2006), and high operational costs discourage small operators from adopting sustainable practices without financial incentives. Limiting visitor numbers to protect ecosystems may reduce short-term revenues, impacting tourism-dependent communities (Gössling *et al.*, 2019). Knowledge gaps also hinder adoption of sustainable practices, with tourists and local stakeholders unaware of the principles of sustainable tourism (UNWTO, 2019). Educational programs and public campaigns are essential to fostering long-term behavioral change (Bramwell *et al.*, 2011). Aligning priorities among governments, businesses, and communities can be challenging, as short-term profits often conflict with long-term sustainability (Honey, 2008). Despite these challenges, sustainable tourism is gaining traction. A 2023 survey by Booking.com found that 76% of

travelers were interested in sustainable travel, with nearly half willing to pay a premium for eco-certified accommodations (UNWTO, 2019). Practical examples of sustainable tourism include eco-friendly hotel chains and ethical wildlife tourism. For instance, Marriott and Hilton have introduced measures to eliminate single-use plastics and reduce energy consumption, while Australian destinations promote solar-powered resorts (Gössling *et al.*, 2019).

Plogging, a combination of jogging and trash collection, exemplifies how tourism can directly benefit the environment while providing meaningful experiences for travelers (Loureiro *et al.*, 2022). Integrating plogging into tourism packages encourages environmental conservation and offers engaging activities for visitors. Further research is needed to explore factors motivating sustained adoption of Plogging (Vidal-Matzanke *et al.*, 2022). In conclusion, sustainable tourism provides a pathway to balance environmental, economic, and cultural goals. By addressing challenges through collaboration and innovative practices like Plogging, the tourism industry can significantly contribute to global sustainability.

2.7 Service Design

Service design is an interdisciplinary approach aimed at improving the quality of services by organizing and planning their key components—people, infrastructure, communication, and materials—to make services more user-friendly, competitive, and relevant. Using a human-centered, collaborative, and holistic approach, service design integrates user insights to create meaningful interactions between service providers and customers (Bitner *et al.*, 1994; Stickdorn *et al.*, 2012; Blomkvist *et al.*, 2011).

Design thinking is the backbone of service design. It is an iterative, user-centered approach to solving complex problems creatively and collaboratively (Curedale 2016). The design thinking process includes: 1) Empathize: Understand users' needs, challenges, and perspectives. 2) Define: Clearly articulate the problem based on user insights. 3) Ideate: Brainstorm and generate creative ideas to solve the problem. 4) Prototype: Develop low-fidelity

versions of potential solutions. 5) Test: Validate the solutions by collecting user feedback to refine the service (Figure 4). By cycling through these five stages, design thinking allows for flexible, user-focused problem-solving. This approach is essential in service design, where the primary goal is to create solutions that are responsive to the needs of the customer and adaptable to their evolving requirements

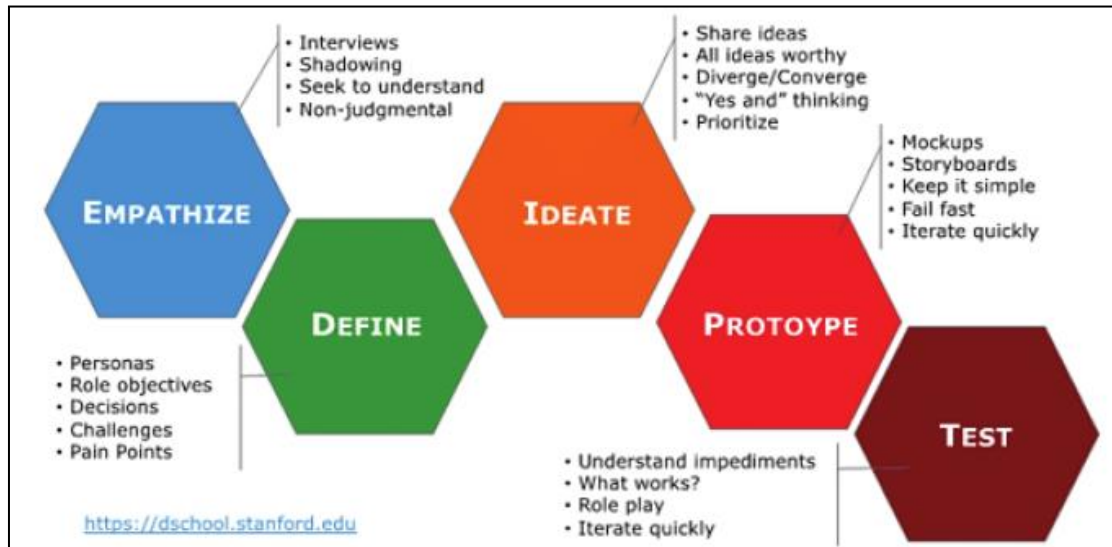


Figure 4. Design Thinking Process (Stickdorn et al., 2012)

In service design, experience-centricity means focusing on crafting the customer experience to enhance the perceived value of the service. Experience-centric services prioritize understanding hidden customer needs and creating touchpoints that result in a memorable and distinct experience. Key tools include: 1) Persona Development: Creating user personas to understand diverse customer needs and expectations. 2) Empathy Mapping: Mapping users' emotional and rational responses to various aspects of the service. 3) Journey Mapping: Visualizing the customer's journey through all touchpoints of the service to identify areas for improvement. Experience-centric services provide a deeper understanding of customers' values and expectations, enabling service providers to design offerings that resonate on a personal level, transforming routine interactions into valuable experiences (Zomerdijk *et al.*, 2010)

Co-creation in service design emphasizes collaboration with all stakeholders—customers, employees, and other partners—to create value collectively. Co-design involves actively involving these stakeholders in the design process, allowing for insights and feedback that ensure the service meets a wide range of needs. Techniques include: 1) Co-Design Workshops: Structured sessions where stakeholders share ideas and insights 2) User Participation: Engaging users in various design stages to enhance their experience 3) Value Co-Creation: Ensuring that the service provides mutual value for both providers and customers. Co-creation leads to a more inclusive and effective design process that aligns service elements (like physical spaces, customer interactions, and the service delivery process) with users' desires and expectations, resulting in a more meaningful and fulfilling service experience (Wetter-Edman *et al.*, 2014; Teixeira *et al.*, 2012).

Service design projects are practical applications of service design principles focused on creating innovative, efficient, and effective solutions. These projects aim to improve the overall service experience by refining core aspects: 1) Designing Customer Experiences: Shaping all interactions to foster satisfaction and loyalty. 2) Identifying and Solving Problems: Anticipating user challenges and proactively creating solutions. 3) Personalized Engagement: Recognizing each user's unique preferences and creating touchpoints that build positive emotional responses. Service design projects are comprehensive initiatives that blend creativity with structure, resulting in services that address user needs holistically. By focusing on empathy, collaboration, and the continuous refinement of service elements, service design projects create a sustainable framework for improving and innovating services over time. Through these interconnected elements—design thinking, experience-centricity, co-creation, and practical applications—service design transforms traditional service models, ensuring they are adaptable, user-centered, and sustainable for the long term (Stickdorn *et al.*, 2012).

3. Service design process: Discover

3.1 Desk Research

Desk research is a secondary research approach that involves gathering and synthesizing information from existing literature and other secondary sources to understand the broader context surrounding a service. It is a useful method in service design that serves several purposes: Problem identification and direction setting, where desk research helps clarify the problem to be solved or identify potential opportunities for service development or improvement; understanding customer and user needs, providing insights into potential users' behaviors, needs, and characteristics, which helps define the service's target audience more concretely; competitive analysis, allowing for an evaluation of competitors and similar services, helping to identify a service's position in the market and pinpoint unique differentiators; and trend and industry analysis, identifying recent trends and changes within the industry, offering valuable reference material that can guide the strategic direction of the service design (Stickdorn, 2018).

This desk research examines the current landscape of trash-picking initiatives and the growth of the Plogging movement, especially in Finland. By analyzing these initiatives through desk research, this study aims to provide insights that will guide the design and development of sustainable waste management and community engagement services.

3.1.1 Plogging Movement

The Plogging movement began in Sweden in 2016 as a response to growing concerns over environmental pollution and the buildup of trash in public spaces. The activity combines jogging with trash-picking, encouraging participants to collect trash while exercising. The initiative gained traction due to its unique name, its promotion on social media, and community-organized events, which quickly turned it into a popular trend (Plogging.org, n.d.).

The movement made its way to Finland in 2017, where it became widely adopted through local events and community-based efforts (Figure 5). Social media campaigns played a significant role in promoting the movement, and several regional Plogging clubs formed to organize group cleanup efforts. During this period, intensive cleaning and management of the beach began, centered around Facebook groups. Notable examples include SiistiBiits (2014-), Nuuksio Plogging and Helsinki Plogging Clubs on Facebook (2017-), Zero Waste Finland (2018), Satakolkyt Project (2019), and Coastal Clean-Up Initiatives (2020).

From 2020 to 2022, the Plogging movement was largely driven by individual activities, particularly during the COVID-19 pandemic. By 2023, Plogging had become more mainstream in Finland, with large-scale national campaigns like YLE the Miljoona Roskapussia (Million Trash Bags), launched in April 2023, aiming to engage more citizens in trash collection. The Roskapaiva (Trash Day) campaigns, which started in 2024, further promoted this activity, establishing it as a nationwide environmental movement. This movement reflects the potential for community-based environmental initiatives to engage citizens actively in sustainability efforts while creating a culture of responsible environmental stewardship.

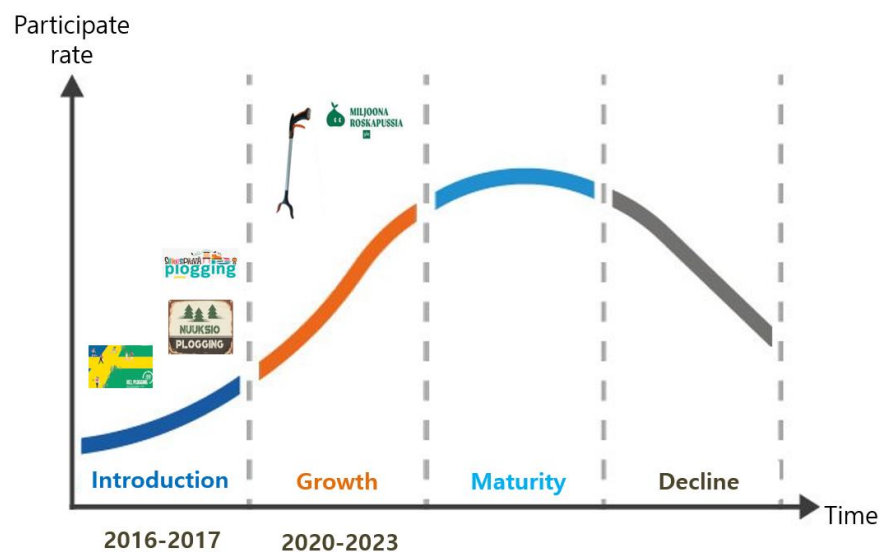


Figure 5. Plogging movement in Finland

3.1.2 Library Trash-Picker Rental Service

The trash-picker rental service, "Lainaaaroskopihdit kirjastosta" ("Borrow Trash Tongs from the Library"), aligns closely with Plogging activities by providing the tools needed for individuals to participate in trash collection. This service began in select Finnish libraries around 2018, allowing citizens to borrow trash-picking tools at no cost. The initiative was introduced in conjunction with the rise of Plogging in Finland and has since expanded to most Finnish libraries. By making trash-pickers easily accessible, the service supports community members in contributing to a cleaner environment.

The trash-picker rental service initially became available in a limited number of libraries but quickly gained popularity, expanding to regional libraries (Turku City Library, 2020). Residents involved in Plogging events showed interest in the service, which created a synergy between the trash-picker rental program and the Plogging movement. As Plogging gained traction, participants increasingly sought tools to aid in trash collection, leading to a natural partnership between Plogging events and trash-picker rentals from libraries. During the COVID-19 period (2020-2022), the service remained largely passive, with limited active engagement. However, the impact of the service became more evident as the Plogging movement and public awareness of environmental issues continued to grow.

The trash-picker rental service was closely connected to cleaning campaigns conducted in various regions of Finland, referred to as "talkootsiivous." These cleaning campaigns primarily take place in the spring when the snow melts and are organized by the municipality's environmental departments. The expansion of the library's trash-grabber rental service appears to have been aimed at encouraging greater participation from residents in these campaigns. Collaborations between library services, environmental organizations, and local governments further promoted the trash-picker rental service, positioning it as an accessible, community-oriented initiative for trash reduction. By offering convenient, free access to trash-pickers, the service motivates residents to

participate in public cleanup efforts, helping to sustain a cleaner environment across urban and rural areas alike (Table 1).

Desk research on Plogging and trash-picker rental services in Finland highlights two key trends in sustainable community service design: the rapid expansion of community-driven Plogging initiatives and the success of accessible tools like trash-pickers in encouraging public participation in environmental activities. Both initiatives underscore the potential of collaborative, community-centered approaches to improve waste management and support sustainable practices across Finland. These insights are invaluable in informing the design of new services and enhancing existing ones in the realm of environmental and community-oriented service design.

Year	Plogging	Library rental service
2016	Origin of Plogging in Sweden	
2017	- One-day events (e.g., Siivouspäivä & Fortum events in Finland)	
2018	- Expansion with community organizations - Zero Waste Finland Association (April) - Plogging events (e.g., Töölönlahti, Hakuna Matata SUP-boards, June)	- Start of rental services in Finnish libraries - "Borrow trash cans - Keep Clean City!" initiative starts - Libraries:
2019	- Satakolkyt Project (Helsinki coastal cleanup initiative) - Garbage-Free City Project (Vantaa)	HELMET(2018-) Hyvinkää (2018-) TURKU(2020-) SAVONLINNA(2020-)
2021	CORONA period	- Seinäjoki Library adds rental service - Continued expansion of rental services
2023	- Increasing national campaigns - Related hashtags: #ploggingfinland, #plogginghaaste, #roskatalkoot	- Nurmijärvi Library introduces rental services

Table 1. Timeline of Plogging movement and library trash picker rental service

3.1.3 Nurmijärvi Cleaning Task (*Siistiksi* project)

The Environmental Division of Nurmijärvi Municipality undertakes a range of initiatives to foster a cleaner and more sustainable environment. One of the key initiatives is the *Siistiksi* project, which has been a central part of the municipality's environmental efforts for over 30 years (Appendix 2).

The Cleaning tasks for the public areas of Nurmijärvi municipality are organized in the spring (April-May) and fall (September-October) months. The municipality's traditional *Siistiksi* cleaning tasks will be held from April 19 to May 20, 2024, during which the citizens of Nurmijärvi are encouraged to organize and participate in cleaning efforts. Garbage bags and gloves can be borrowed from local libraries to facilitate participation in these events. The *Siistiksi* project promotes not only the cleanliness of the environment but also community spirit and environmental education, emphasizing the importance of collaboration and shared responsibility among residents.

Additionally, the municipality is focusing on improving the infrastructure for waste management. On September 2, 2024, nearly 40 new trash cans were installed across Nurmijärvi's public areas, with an additional ten cans planned for installation in the fall. The citizens of Nurmijärvi voted for the installation of these new trash cans through the participating budget. The municipality emphasized that the responsibility for keeping the streets clean ultimately lies with individual residents, as they are responsible for disposing of trash in appropriate bins.

On June 4, 2024, Nurmijärvi also installed 100 cigarette butt disposal units, with plans to install 50 more next year. This initiative aligns with the European Union's Single-Use Plastic Directive, which came into effect on January 1, 2024. Under this directive, producers of filterable tobacco products and tobacco filters are responsible for preventing trashing caused by their products. Another notable initiative launched in 2024 is the Emptying the Trash Cans Campaign. This campaign encourages residents to use trash cans responsibly by making sure they do not overload them, which can cause bins to fill up faster than

expected. The campaign also educates residents to seek out empty bins nearby if the nearest one is full or take their trash home to avoid trashing. One of the positive outcomes of these efforts has been the establishment of good practices for cleanliness. In 2024, the Sorvankaari kindergarten and Kivenpuisto school collaborated in the cleaning efforts, collecting a total of 16 bags of garbage. These community-driven efforts highlight the importance of cooperation between educational institutions, local authorities, and citizens to create a cleaner and more sustainable environment.

The municipality of Nurmijärvi also participates in national and international cleaning campaigns, such as Yle's Million Trash Bags campaign, where residents of Nurmijärvi collectively collected a total of 668 bags of trash by August 1, 2024. Furthermore, the National Cleaning Day on August 26, 2023, and EarthHour on March 21, 2023, saw significant participation from Nurmijärvi residents, showcasing their commitment to environmental stewardship.

3.1.4 Environmental events at libraries in Nurmijärvi

The library serves as an important physical space for the trash grabber rental service. Traditionally, libraries have been spaces for storing and providing knowledge and information, but today, their role has expanded beyond being mere repositories of materials to becoming significant cultural hubs. Through various cultural activities and programs, libraries function as centers of community engagement, playing a crucial role as the heart of local communities. In this context, the thesis author examined the environmental events held at local libraries. Notable examples: 1) Recycling with the whole family. On April 17 at 6 p.m. in the main library 2) Waste to gain! April 27 from 10 a.m. to 2 p.m. During the day, participants will see how the waste generated in everyday life can be reduced in ways such as repairing, tuning and recycling (Appendix 2).

3.2 Service Safari

Service Safari is an observational research method that allows researchers to experience services from a customer's perspective, providing insights into user needs, challenges, and overall experience (Stickdorn *et al.*, 2012). This immersive approach enables service providers to observe the full customer journey, shedding light on the usability, accessibility, and interaction points within a service. Such firsthand understanding is invaluable for identifying areas of potential improvement, especially when aiming to redesign existing services to better align with customer expectations. Observation, or "shadowing," is often used within service safari studies to capture nuanced behaviors, motivations, and interactions, and to uncover gaps in service that may go unnoticed in traditional feedback (Polaine *et al.*, 2018). Observing not only what customers do, but also what they avoid or struggle with, yields deep insights that can guide effective service enhancements (Stickdorn, 2018).

This service safari project was conducted in two distinct areas: Observing the trash grabber rental services within libraries, Understanding the user experience in "kid Plogging," an activity involving children in trash collection as part of a broader environmental and educational initiative, and Following content related to the Nurmijärvi Cleaning Task in 2024. These observations provide a comprehensive look at accessibility, service visibility, and user engagement across different types of community-based services.

3.2.1 Trash grabber rental services in library

The service safari in this project was conducted to understand the accessibility and visibility of trash-picker rental services within libraries and to assess the operational efficiency of these services.

Research Methodology: The service safari was carried out in February-November 2024 across multiple libraries to investigate how easily residents could locate trash grabbers within libraries, the clarity of the service's information, and any barriers to use. The following steps were undertaken¹⁾

Library Visits: Visited several libraries to locate trash grabbers, observe their placement, and assess the clarity of signage. 2) Rental Experience: Borrowed trash grabbers for a two-week period, during which family members participated in plogging (trash-picking) activities using the tools. 3) Evaluation: Recorded observations regarding service usability, visibility, and potential improvement areas.

Result: The good points and improvement points of the observations at Nurmijärvi three libraries are as follows. 1) Good point: The trash grabber rental service at Library is conveniently located in a central and easily accessible area. Library websites could be accessible to confirm the availability of trash-grabber rental services and the ease of finding this information online.

At the Klaukkala and Nurmijärvi Library, trash grabbers were placed close to the information desk with clear signage, making the service easy to locate. The proximity to a high-traffic area likely contributed to higher visibility and awareness. At the Rajamäki Library, trash grabbers were located away from the information desk, making them difficult to find. Signage was sparse and lacked visual impact (Figure 6). From November to March, usage is low, so the service is often placed in a corner or inside the office. 2) Improvement point: there was limited promotional material highlighting the rental service, potentially reducing awareness among new or potential users.



Figure 6. Location of trash grabber service at libraries in Nurmijärvi

Location type of the service: the thesis author visited libraries other than Nurmijärvi to check how the service is positioned at those locations, and the characteristics are as follows. The location of the trash grabber service is categorized into four types. 1) Open Display: In some libraries, trash grabbers were placed in open, visible bins. 2) Mixed Storage: In others, grabbers were stored alongside various rental items, creating a cluttered appearance and making them difficult to locate. 3) Closed Cabinets: Some libraries stored trash grabbers in closed cabinets, reducing visibility. 4) Office Storage: The least accessible method observed was storage in office spaces, inaccessible to visitors and without signage to indicate availability. Also, in cases, service information was not prominently displayed, especially in libraries without designated signage. The evaluation about observations regarding service usability, visibility, and potential improvement areas is provided in Appendix 2.

Based on the observations, a SWOT analysis (Figure 7) was created to identify strengths, weaknesses, opportunities, and threats of the trash-grabber rental service: Enhancing visibility, promotional materials, and online/offline information about trash-grabber rentals would increase service utilization and strengthen its role in environmental conservation efforts.



Figure 7. SWOT Analysis at Nurmijärvi the Libraries

3.2.2 Kid Plogging

Kid Plogging observation was conducted to observe users of the trash grabber rental service within the library and to assess the usefulness of the service. Kids were chosen as the target group as part of an environmental education initiative.

Research Methodology:

- **Date:** Since June 2023 to the present, over 100 Plogging sessions have been carried out, making it a consistent and enriching part of family outings
- **Participants:** Kid Plogging was conducted with children aged 3 and 5, along with active participation from their adult family members.
- **How:** Participate in plogging during family leisure activities, such as at playgrounds, nearby walks, biking, swimming, or traveling, without being restricted by location or method, taking just a short amount of time (Appendix 2).
- **Location Choices:** Plogging sites are chosen to be child-friendly and familiar, such as playgrounds, parks, and school areas. This activity has not only taken place locally in Klaukkala, Nurmijärvi but has also spanned a variety of settings, including popular family spots such as beaches, parks, and travel destinations. Notable sites include scenic areas across Norway's Lofoten, Sweden's Umeå, Stockholm and across Finland in cities like North (Rovaniemi, Kajaani), East area (Vaasa, Rauma, and Uusikaupunki), Middle of Finland (Savonlinna, Joensuu, Kuopio), South of Finland (Kotka, Lappeenranta), Uusimaa (Tempere, Lahti, Hameenlinna, Riihimäki, Hyvinkä).
- **Session Duration:** Plogging sessions are designed to be brief, especially for younger children, typically lasting 5-10 minutes.
- **Tools and Equipment:** Essential Plogging tools include child-friendly trash grabbers and small trash bags. Trash grabbers are both practical and enjoyable for children to use, turning trash collection into a fun and engaging task.

The good points and improvement points of the observations are as follows. Good point 1) Trash grabbers, often viewed as a "toy tool," transform into instruments for "Trash Hunting," making trash collection a fun and engaging activity for children. Also, the trash grabbers draw the attention of nearby children. Their curiosity about the activity leads them to want to touch the tool and try picking up trash themselves. This playful approach encourages repeated participation and makes the experience memorable for young children. 2) The activity of picking up trash offered various benefits for children, including: ① Environmental Awareness: They began to understand the importance of responsible waste disposal and its impact on the environment, developing sustainable habits from an early age. ② Healthy Habits: By incorporating Plogging into family outings, they developed a love for nature and responsible outdoor activities. ③ Community Encouragement: Positive feedback, such as friendly greetings and rewards, made them proud of their contributions. ④ Sense of Pride: They took pride in seeing their activity photos displayed on community bulletin boards and were eager to introduce Plogging to their friends (Appendix 2).

Improvement points 1) Difficulties with big trash Grabbers: While trash grabbers are engaging for children, some struggle with the hand strength required. Alternatives like kitchen tongs can be used, but they are less ergonomic and may require more bending. 2) Encountering Hazardous Waste: Children occasionally come across hazardous items like cigarette butts or drug paraphernalia. These items pose safety risks and can be difficult to explain, making adult supervision essential. 3) Handling Collected Trash: Some children have difficulty managing the disposal of collected trash, especially hazardous or bulky items. Adult assistance is needed for safe disposal, highlighting the importance of guidance throughout the Plogging process

Based on the observations, a SWOT analysis (Figure 8) was created to identify strengths, weaknesses, opportunities, and threats of Kid Plogging.



Figure 8. SWOT Analysis on Kid Plogging

The strategies for encouraging children's participation in Plogging are as follows: 1) Making Plogging Accessible with Short Sessions: Plogging can be incorporated as a quick activity during family outings, such as 5-minute sessions while walking to the beach or taking a break. As children and families become more accustomed to the activity, the duration can gradually increase. Eventually, Plogging can be extended to vacation destinations, offering a combination of familiar and new environments to help children connect with diverse natural settings. 2) Adult Guidance for Safety and Effectiveness: Adult supervision and involvement are essential to ensure the safety and success of Kid Plogging, especially for young children.

3.2.3 Nurmijärvi Cleaning Task

The service safari for this project was conducted to see what is happening in the Environmental Division, Nurmijärvi Municipality (Appendix 2).

1) Cleaning task: The municipality's traditional *Siistiksi* cleaning events have been organized in Nurmijärvi for over 30 years.

Good Point: The information about the event in the Nurmijärvi municipality's newsletter could be found.

Improvement Point: Lack of Information Signage – The thesis author visited the library to check for information but could not find any signs or details about the event.

Ideation: Promoting *Siistiksi* at the Library: To improve promotion, the municipality and library should collaborate to display the *Siistiksi* logo at the library during the spring and fall cleaning events. Additionally, they could use TV advertisements and printed posters to share information.

2) New trash grabber

The thesis author often visited the library and noticed that the trash can had changed. She used the trash can deployed in 2023 and was satisfied with its lightness and convenience, so she purchased a product of the same brand.

Good Point: The new trash grabber is more durable than the previous one, and it's much easier to pick up cigarette butts.

Improvement Point: The main issue is "use by children." The updated trash grabber seems difficult for children to use, which presents a challenge.

3) The installation of new trash bins and cigarette butt trays

As summer passed in 2024, the thesis author noticed a new trash can installed near her house, primarily filled with dog waste. In 2023, she had suggested installing a Ticks-pack recycling stand through the Nurmijärvi's feedback service (Solmu, n.d.) but was informed there was a budget shortage. The thesis author felt that the new trash can this year fulfilled her original idea. Additionally, the installation of a cigarette butt trash can caught her attention. She appreciated that the local government did not have to fund this trash can due to the SUP (single-use plastic directive). Waste activists highlight cigarette butts as a major problem, and she hopes this new trash can will reduce cigarette butt waste and prevent children from picking up cigarette butts.

4) New Campaign "Emptying the trash cans"

Before learning about this campaign, the thesis author would dispose of trash at home after picking it up, but for other locations, she used nearby trash cans. If the trash bag was large, she often worried that it might fill the trash can, preventing others from using it. Despite this concern, the thesis author preferred to return home without carrying trash for hygiene reasons. However, after reading an article about the campaign online, she now tries to bring her trash home to dispose of it after plogging, even if it means compromising slightly on hygiene. This campaign provides insights into the post-activity aspects of picking up trash.

3.3 Auto-Ethnography: A Journey Toward Climate Action

Auto-ethnography serves as a valuable method for examining and describing personal experiences within social and cultural contexts (Ellis *et al.*, 2010). Unlike more traditional methodologies focused on objectivity, it enables researchers to explore how personal narratives intersect with broader societal structures and norms (Chang *et al.*, 2013). In this study, the thesis author uses auto-ethnography to analyze her experiences with Plogging, a form of environmental action combining jogging and trash collection, and to reflect on how this activity contributed to her journey toward more proactive climate action. The research question driving this exploration is: "Can Plogging extend beyond simply creating cleaner streets to inspire meaningful climate action?"

Research Methodology

In this study, the thesis author's experiences as a plogging participant are documented to capture both the joys and challenges she encountered. She chronologically organized her journey using notes and photos taken during plogging sessions. Each reflection involved a process of emotional recall, cooperative memory recall, and an open admission of thoughts. This approach allowed the thesis author to connect individual reflections to broader social and cultural themes, with the analysis presented in the form of an autobiographical

narrative. Her journey with plogging began in June 2023 and extended through to October 2024, with seasonal breaks from November to April. This activity evolved into more than a simple routine; it became a meaningful exploration of personal motivation, the discovery of local waste patterns, and a journey of personal and community-driven environmental awareness.

3.3.1 Results

1) Motivations for Plogging behavior: "What triggers you to take action?".

The motivations behind the thesis author's plogging were multifaceted. The motivations that drew her to plogging were layered, encompassing personal, environmental, educational, and recreational factors. Personal: A major driver inspired by a friend's kids and seeking meaningful activities while her children played outside. Environmental: Her desire to shield her children from witnessing trash scattered in public spaces. This pushed her to take active action. Educational: As a mother, the thesis author wanted to model responsible environmental behavior. Leading by example allowed her to instill in her children a sense of civic duty, showing them the importance of caring for shared spaces. Recreational Use of Time: The thesis author began incorporating plogging into family outings, discovering that it added a layer of purpose to their leisure time and allowed them to explore their community more deeply.

2) The usefulness of the trash grabber for picking up trash: *How effective are garbage tongs at collecting trash?* The evolution of the thesis author's trash-picking method highlighted how a simple activity can grow into a structured practice (Figure 9). At first, the thesis author would casually pick up trash while walking by hand. This spontaneous habit soon evolved as she realized the positive impact of intentional efforts to reduce trash. Adopting the Trash Picker Tool: Her experience with plogging improved markedly after the thesis author began using a trash picker tool. This tool offered several advantages: Hygiene: It provided a clean way to handle trash. Physical Benefits: Using the tool allowed me to maintain better posture and avoid frequent bending. Inclusion of Children: The tool also made the activity more accessible for her children,

encouraging them to engage in the process enthusiastically. According to Minna Mäkinen from the "Malmi SeutuSiistiksi Roskista" group, trash grabbers are highly recommended as they provide great assistance when picking up trash (Reija Ypyä, 16.05.2023, Figure 9).

STEP 1 (By hand)	STEP 2 (Disposable glove)	STEP 3 (Gloves)	STEP 4 (trash picker)
Without bag		With bag	
			
(-) Hands getting dirty.	(-) Additional generation of disposable environmental waste with bags and gloves.	(-) Inconvenience of laundry after use.	(+) Hygienic (+) Children's participation (+) Comfortable posture
(-) Uncomfortable posture: Causes back pain			

Figure 9. Evolution of the trash activity tool

3) Discovering Patterns in Local Trash: "Small and minor Trash" (Appendix 2). As the thesis author continued plogging, patterns in the types of trash she encountered became apparent, reflecting both societal behavior and environmental impacts. Surprisingly, large items were uncommon, while small, often unnoticed trash was abundant. The thesis author referred to these as "minor trash"—items like straws, candy wrappers, and plastic fragments. Though seemingly insignificant, their sheer frequency makes them a significant problem. Site-Specific Trash Types Playgrounds: Snack packaging was common. Schoolyards: Crushed cans, candy wrappers, and lollipop sticks were frequently found. At Isoniitun Koulu, the outdoor theatre area was filled with alcohol bottles and trash. Parks and Natural Areas: Snack bags and picnic debris were prevalent. Beaches: Valkjärvi Lähtelä: Found shotgun shells and firework fragments. Saaksijärvi: Wristbands from nearby waterparks and small food wrappers were scattered along the shore. These patterns highlight the need for location-specific waste management solutions.

4) Good point: The true value of Plogging is the change in mindset it creates. It's not just about picking up trash anymore—it's about making a deliberate effort to tackle climate issues. The thesis author experienced a range of psychological rewards through these activities. Personal and Family Benefits: Plogging strengthened family bonds, creating a shared activity that fostered pride in our community contributions. Leisure: It became a fulfilling hobby. Educational Impact on Children: It helped the thesis author's children develop a sense of responsibility toward waste management and sparked an interest in environmental education. Physical and Mental Wellbeing: Plogging improved our physical health, connected us to nature, and provided mental clarity through mindfulness. Community and Social Engagement: Plogging deepened her connection to the community, enhancing her integration and sense of pride as an immigrant.

5) Challenge point: While Plogging offered rewarding experiences, it was also fraught with physical and psychological challenges. Methods of Trash Collection: Initially, the thesis author attempted to collect trash using bare hands or disposable gloves, which quickly proved uncomfortable. Choosing the right equipment became essential for maintaining consistency in her efforts. Trash Bags and Disposal: Finding suitable trash bags was a continuous challenge. Biodegradable bags often tore easily, while other types lacked sufficient durability, highlighting the importance of accessible tools for environmental efforts. Hazardous Trash: Sharp objects like broken glass and cigarette butts posed a safety risk. Lack of Public Trash Bins: The thesis author noticed the absence of child-friendly bins, which made it difficult to teach children about proper disposal practices. Time Commitment: As Plogging became part of her routine, she realized that leisure time was sometimes sacrificed, shifting her focus from relaxation to an environmentally conscious activity. Seasonal Factors: As temperatures dropped, her Plogging frequency declined, underscoring the need for seasonal adjustments in outdoor activities. The most challenging aspect was the emotional burden. Emotional Burden: As the thesis author became more committed to Plogging, a sense of guilt would arise whenever she saw trash and lacked the tools to pick it up. According to Ella

(Lepistö, 2024), trash activists experience "häpeä" (shame). However, the thesis author experienced guilt in her case, which she identified as a negative emotion distinct from shame. It's the feeling she gets when she sees trash but cannot pick it up, often finding herself hoping someone else will take care of it as she walks by. This feeling is not unique to her—it's also shared by her child. For instance, when they see trash while in the car, she often expresses her wish to pick it up. This shared sense of guilt highlighted the importance of involving more people in plogging activities to distribute the responsibility and ease the burden on individual participants.

6) Evolving Environmental Participation: The Plogging journey from awareness to action has created new opportunities: Environmental Advocacy: Plogging inspired me to promote sustainable practices like recycling and reducing single-use plastics. Policy Recommendations: Observing environmental issues firsthand led me to suggest improvements, such as installing recycling stations and promoting grabber tools and bag dispensers. Community Engagement: Lecture about the advantage and effects of trash collection (25. March 2024): Sustainable Lifestyle Acceleration Participation (March-May 2024) workshops, and group Plogging activities *Roskapaiva* 2024 (7. September 2024): helped connect me with others who share similar goals, fostering collective action for community change. From garbage collection to garbage activism": trash activists aim to contribute to society and social change through their activities (Lepistö, 2024). inspire others and encourage further environmental action, the thesis author decided to share the lessons and successes of her journey ([instagram.com/family_plogging](https://www.instagram.com/family_plogging)). See Appendix 3 for more details.

7) Conclusion: The research results are as follows (Figure 10): First, the Trash Grabber as a Game Changer: This simple tool not only made trash collection easier but also strengthened the thesis author's commitment to Plogging. Second, micro–Trash Awareness: The thesis author realized that small pieces of trash, often overlooked, can have a significant impact, highlighting the importance of individual efforts. Third, growth Phases of Environmental Interest: What started as a casual activity gradually evolved into a habit, a passion, and

a platform for community and family engagement. Fourth, Empowering the Community: Despite occasional guilt and sacrifices, this journey has enhanced the thesis author's sense of self-efficacy, knowing she is contributing to both her family's well-being and the environment. Through these small yet impactful actions, the thesis author hopes to inspire others to join her in building a cleaner, more sustainable future. In summary, Plogging with a trash picker serves as a meaningful climate action for environmental protection, transcending the simple act of picking up trash to become a powerful contribution to our planet's well-being.

Positive	1) Personal -Physical and Mental Wellbeing -Community and Social Engagement 2) Family Benefits -New hobby -Strengthened family bonds -Educational Impact on Children (Environmental, Voluntary)
Negative	Emotional Burden Guilt, häpeä (shame) to children : :I need more participator
Challenge	Tools of Plogging, Trash Bags and Disposal, Dangerous trash, Lack of Public Trash Bins, Seasonal Factors
Evolving Participation	1) Personal Environmental Advocacy toward sustainable lifestyle From Garbage Collection to Garbage Activism(SNS) 2) Society Policy Recommendations, Community Engagement - Sustainable Lifestyle Acceleration Participation - Plogging Lecture Participation (Mar, 2024) - Community Plogging Events (Sep, 2024)

Figure 10. Summary on the results of Ethnography

3.4 Survey

A survey is a research methodology that involves collecting data using a questionnaire specifically designed to systematically gather and analyze people's opinions, attitudes, experiences, and behaviors on a particular topic. This method allows researchers to collect data from respondents through a standardized questionnaire, enabling the systematic organization and analysis

of information aligned with predefined research objectives (Stickdorn, 2018). By doing so, surveys help researchers understand and predict the characteristics of specific phenomena or groups. The survey aimed to collect user feedback on the trash grabber rental service to understand user perspectives, service usability, and areas for improvement.

Methodology

The survey was conducted in two stages: a pre-test to refine the survey questions, followed by the main survey to gather comprehensive data from library visitors.

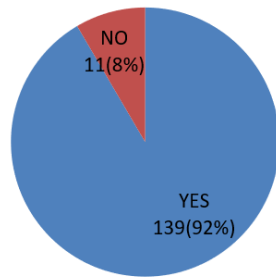
- **Survey Periods:** The main survey was conducted as a one-time event across several months to capture diverse user responses, taking place in June (12-14, June 2024), August, and September.
- **Sample Size:** A total of 150 valid responses were collected and analyzed — 100 from the Klaukkala library and 50 from the Nurmijärvi library. The Rajamäki library was not included due to a lower visitor count, which posed challenges in obtaining a sufficient sample size for reliable analysis.
- **Pre-Test:** The initial 20 survey answer draft was piloted in March (16. March 2024) to test the clarity, relevance, and effectiveness of the survey questions. Based on the feedback, several questions were modified to improve comprehension and ensure alignment with the survey's objectives.
- **Main Survey:** The full survey was administered at two libraries, Klaukkala and Nurmijärvi, with the goal of reaching a broad audience of library visitors to obtain meaningful and representative insights (Appendix 2)

3.4.1 Results

High Awareness and Concern for Environmental Issues: The results for survey questions Q1 and Q2 (Figure 11) show that citizens are highly aware of the climate crisis, recognizing its urgency and the severity of environmental issues. They view activities like "Plogging" (jogging while collecting trash) as environmentally beneficial. Research highlights that problem awareness and

understanding the impact of one's actions are key precursors to eco-friendly behavior. This indicates that citizens hold personal norms and beliefs supporting environmentally responsible actions.

Q1. Are you interested in climate change?



Q2. Is collecting garbage a useful for environment?

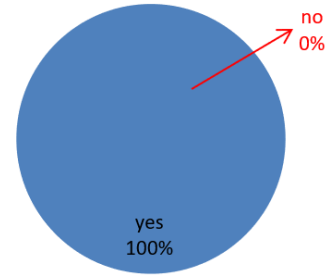
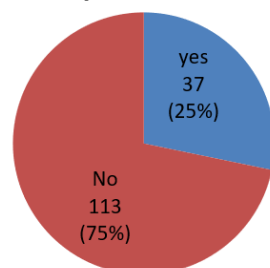


Figure 11. Results for Survey questions Q1 and Q2.

Low Awareness of Trash Grabber Rental Service. The results for survey questions Q3 and Q4 (Figure 12), despite the benefits and potential of the trash grabber rental service offered by libraries, show low public awareness of the trash grabber rental service offered by libraries. While some libraries display the tools prominently with A4 posters, most of them keep them in less visible areas without clear signage. This limits accessibility and suggests the need for better outreach and promotion to boost community awareness and usage.

Q3. Did you know that the library offers a "Lainaa roskapihdit" service?



Q4. Where did you get the information?

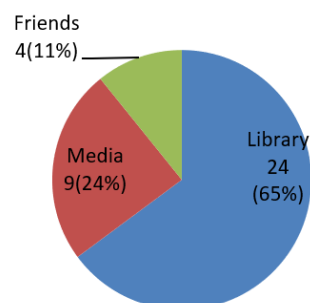


Figure 12. Results for Survey questions Q3 and Q4

Experience about trash grabber rental experience (Figure 13). Q5. During the survey, it was challenging to find individuals who had used the trash collection rental service offered by libraries. Among those aware of the service, only one person had actually utilized it. This suggests a disconnect between awareness of the service and engagement in rental activities. Q6. When asked why they had not used the rental service, respondents fell into two categories: an indifferent group (20%) and a group needing motivation (80%). Feedback from the latter group, gathered through brief interviews, included reasons such as "I do not have time," "I lack the awareness or interest to participate," and "I was not presented with a specific opportunity to get involved."

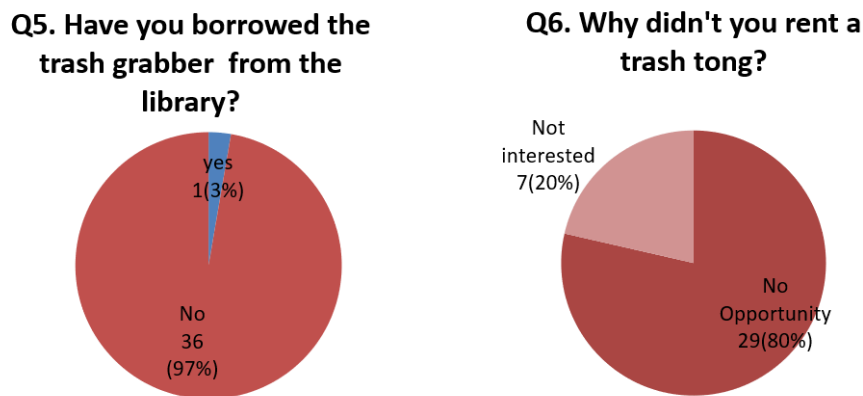


Figure 13. Results for Survey questions Q5 and Q6

User experience of trash grabber rental service, finding participants with experience using the trash grabber rental service was challenging. During the survey, five respondents with prior rental experience agreed to participate in brief interviews. Among the 5 users, 4 owned their own trash grabbers, and the challenges of trash picking activities were identified as portability, lack of time, and limited opportunities for participation.

"I borrowed a trash grabber from the library, and after trying it, I found it convenient and purchased one from the market right away. I mainly use it to clean the area around my home. Some of my friends also own trash grabbers.

When cleaning, it is inconvenient to carry the trash grabber when going to places outside my home area." (Raija Järviö, 60s, Klaukkala)

"Since I already own one, I did not need to rent it from the library. "It is very convenient for cleaning (Two women in their 60s)"

"I did not rent it myself, but my daughter rented a trash grabber through the library. My daughter participated in a cleaning event at MaaniittuKoulu, and we picked up trash together. However, since then, we have not participated in any additional trash picking activities due to a lack of opportunities (Heini, 40s, Nurmijarvi Library)

"I have never rented from the library. However, I own a trash grabber, and although I cannot do trash picking often because my kids are young, I occasionally pick up trash with them. The kids really enjoy it." (Kirsi Lauttanaho, 30s, Nurmijarvi Library)

Behavior Intention about trash grabber rental service. Q7 survey (Figure 14) results show that, excluding the indifferent group (20%), 80% of library visitors have a positive attitude towards the intention to use the service. Notably, more than 50% of respondents feel that providing opportunities to turn their positive attitude into action is necessary. For the 30% in the neutral group, it seems important to provide information about cleaning tasks and Plogging with the trash grabber, as well as to raise awareness of its benefits."

Q7. If you have the chance, Would you rent a trash grabber from library?

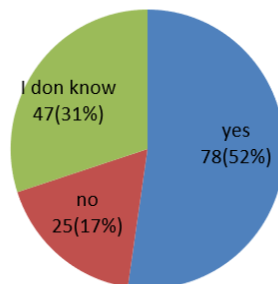


Figure 14. Result for Survey question Q7

The demographic characteristics of the survey participants at the library showed that the proportion of women was approximately three times higher than men. In terms of age and visit patterns, participants in their 30s and 40s, often visiting with children, had the highest participation rates, followed by those in their 60s and teens (Figure 15).

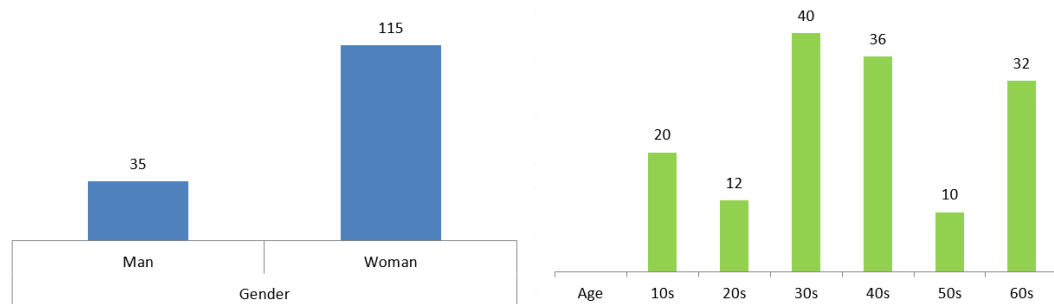


Figure 15. Demographic characteristics of the survey participants

Increase awareness about the service from this survey. The thesis author has received substantial feedback. The survey not only confirmed library visitors' awareness and experience but also provided initial information about the trash grabber rental service, helping to raise awareness of the service (Appendix 4).

Lastly, the research results are as follows: The data collected from the survey participants provided valuable insights into user experiences, satisfaction levels, and any barriers to using the service.

The findings from this survey form the basis for actionable recommendations to optimize the trash grabber rental service and enhance its effectiveness and accessibility. 1) Survey results show that library visitors have a high level of awareness and concern about environmental issues. However, 75% of them were unaware of the trash grabber rental service, indicating a lack of promotion. This is especially concerning since the library's regular customers were surveyed, and the service is located centrally within the library. Despite this, there seems to be insufficient publicity. 2) On a positive note, the intention to use the rental service shows potential, as 80% of respondents (excluding the

indifferent group) could be motivated with the right incentives and opportunities. It is important to strengthen the promotion of the service's benefits and uses, providing an opportunity to convert interest into action. Interviews with users suggest that expanding the service through school education for teens would be beneficial. 3) A limitation of the survey was the lack of questions about the local government's spring and fall cleaning events. Additionally, it was challenging to find users with experience renting the service among library visitors. Future surveys could benefit from using social media groups (such as Plogging, Siistikilma) to gather more information.

3.5 Interview

Interviews are a qualitative research method used to gather in-depth insights directly from participants. Interviews are widely used in service design processes as they provide a simple method with which customers' voices can be heard and interpreted into research data (Stickdorn, 2018). The primary objective of these interviews was to gain insights into the motivations, challenges, and ideas for enhancing participation in Plogging from the perspective of Plogging users. These insights were intended to inform practical strategies for promoting the trash grabber rental service and broader Plogging initiatives.

3.5.1 Methodology

1) Method

The interview was purposefully selected through sampling and snowball sampling, with all participants being directly or indirectly related to Plogging or the trash grabber rental service. Semi-structured interview questions focused on motivations, benefits, challenges, the usefulness of the trash grabber, and ideas for increasing participation in trash picking from the perspective of Plogging users. Interviews were conducted from April to November 2024 using a mixed method of online meetings, offline meetings, and email during 30min-1hour.

Participants gave prior consent for their interviews to be recorded, and implications were derived from the recorded content.

2) Background of Interviewees (Figure 16)

"Jooyoun Lee" served as the initial inspiration that transformed the thesis author's positive attitude toward plogging into action. Learning about a 13-year-old girl dedicating her free time to picking up trash motivated the thesis author to "do something for the environment," sparking her own plogging journey. Here are five individuals related to trash picking activities in Finland: "Juha Paulamäki" a staff member at Sello Library, began Plogging with his children after starting the trash grabber service at the library. He engages in Plogging to educate his children about the environment and create a cleaner environment. "Kaisu Paulanto", a neuropsychologist, has been actively involved in plogging for the past five years. She founded the Nurmijärvi Plogging group on Facebook (+470 followers) and runs the "Roskajuoksijan Diary" on social media (+4180 follower), encouraging others to be more mindful of their environment. Her efforts have inspired people in Nurmijärvi to participate in trash plogging. In recognition of her contributions, she was honored at the 2019 Nurmijärvi Gala and took part in Yle's One Million Garbage Bags campaign in 2023. "Ella Lepistö" is a Trash activist Researcher and master's Student (Lepistö, 2024). She conducted the ethnography with trash activists in 2023 and provided a scholarly perspective on the social and environmental impacts of trash activities. Eino is a dental technician and a well-known environmental influencer on social media. He managed the roskapäiva Instagram account (+130,000 followers) and shares an important message about nature, the environment and influencing. He received a grant from the Kone Foundation, and which allowed me to do trash work full-time. Nowadays beyond his garbage work, he is very interested in school education. Eino's Garbage Day school visits first include a lecture at school and then go out on a garbage collection trip, the idea of which was to encourage children and young people to take care of their local environment through their own example. Niko Niemi is a Founder of Roskapihtilainaamo in Lahti. His concept aims to increase accessibility to

plogging tools and raise awareness by creating temporary stations where people can learn about and participate in Plogging activities. He is involved in a variety of community activities. Chair of Ankkurilahti residents' association (2020), Environmental Capital Ambassador (2021), European Climate Agreement Ambassador (2022). Lastly, Hyeyoung Lim as a prospective Plogging participant, the thesis author conducted an experiment in which the thesis author cautiously encouraged Plogging by supporting her as a trash grabber.

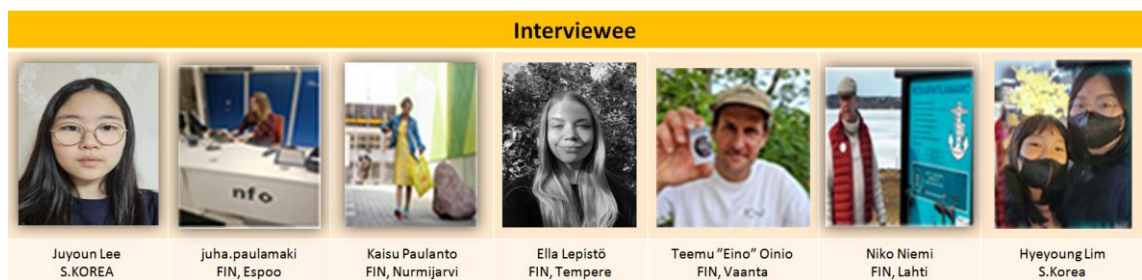


Figure 16. Interviewees

3.5.2 Results

The research results are as follows (Figure 17): First, Participation Background: Interviewees had varied motivations for engaging in Plogging, but all shared an underlying awareness of environmental issues. A strong personal determination to start small and take action emerged as a common driver for turning awareness into behaviour. Second, The use of trash grabbers varied among participants. Students preferred smaller grabbers, while plogging runners favored gloves for simplicity. However, participants agreed that trash grabbers offer convenience, hygiene, and physical comfort. They are not only beneficial for experienced ploggers but also serve as effective tools to introduce beginners to Trash-picking activities. Participants highlighted Finland's progress in creating an environment conducive to Trash-picking, such as expanding library rental services and outdoor pop-up shops like Lahti's case Third, Plogging's benefits included environmental action, educating children, cleaner streets, and fostering positive habits. Challenges, however, involved seasonal constraints, social

perceptions, and cultural differences in waste sorting. Forth, To promote plogging, interviewees emphasized incorporating it into school education and increasing visibility through social media and events. For library rental services, they suggested enhancing promotion, connecting with national campaigns(Yle's "Million Garbage Bags, *Siistiksi* talkoot), and organizing community-focused events.

Background	School Education, Environmental education for children Environmental threats through observation, contribute to sustainability
Trash Grabber & Rental Service	1. A tool used for picking up trash, typically during clean-up activities or plogging. (+) Convenience, Hygienic and safe (protects hands, safety from needles), and Ergonomic (protects back) (-) Hygiene issues with grabbers, Hand discomfort, Durability and Portability 2. My recommendation, Good services to facilitate events
Emotion	(+) Actions for the planet and nature - Environmental education for children - Satisfaction with cleaner streets - Positive feedback from others - Can be done anytime, anywhere (on commutes, business trips, walks) -A catalyst for changing personal habits (-) Guilt
Barrier	- Seasonal constraints (winter) - Cultural factors (recycling in Korea) - Concerns about dirt and hygiene - Shyness or stigma around picking up trash
Action Ideas	- Incorporate into school education with some mandatory participation - Increase visibility by practicing it more frequently: "The more people see it, the more they will join." - Inspire others by setting examples

Figure 17. Summary on the results of interview

3.6 Benchmarking

Benchmarking is an analysis method that can be used in evaluating and comparing services or products to its competitors or other service providers. Usually, the benchmark is done against competitors who are in by some means performing better than the organization or service provider in question. Benchmarking may help in identifying own services and action's weaknesses and strengths (Tuulaniemi 2011). The aim is to find best practices and gain possible improvements and ideation for own performance. In this study,

benchmarking examples have been organized across hardware and software dimensions, each examined to provide insights into existing solutions and inspire prototype development.

3.6.1 Library

1) Hardware

Stand/ storage of trash grabber: Actually, Nurmijärvi's open and independent storage stand method is a good example compared to other libraries. From the Service Safari review, trash grabber placements were grouped into four types, with the Open Display being the most effective. Using the Open Display method or creating a clear visual stand/box ideas could help visitors better understand and notice the trash grabber service. Below is a more intuitive example of a trash can being displayed (Figure 18).



Figure 18. Stand/storage of trash grabber, Savonlinna Library

2) Software: PR poster in Library: Most libraries in each region offer trash grabber rental services. To promote these services, they create their own posters and share promotional videos on social media such as *SNS*, *Youtube*.

Below is some notable examples (Figure 19). Also, here are some examples of education kit materials that can be used as reference when hosting a library-related event.



Figure 19. PR poster of trash grabber, Rauma

3.6.2 Municipality

1) Hardware: Outdoor Rental Service (Roskapihtilainaamo, Lahti, Figure 20). In Lahti's beach park, trash grabbers are available for rent through a service funded by the city's environmental budget. This initiative aims to promote cleaner public spaces by providing easy access to Plogging tools. Follow the user interview, the trash grabber users experience the inconvenience of carrying a trash grabber every time. This model will serve as a basis for creating a similar service prototype in local parks to support plogging by reducing barriers to access.



Figure 20. Roskapihtilainaamo, Lahti

Recycle Station (Riihimäki etc): Tikspac originally designed these stations to dispense free bags for dog waste. However, the bags are frequently repurposed as trash bags for general recycling. Although Tikspac stations are found in other areas, this service is not currently available in Nurmijärvi. This example informs the creation of a prototype recycling station specifically for plugging activities in public spaces.

2) Software (Appendix 2)

Website: Kouvola.fi is the one of the best designs and organize case. *SiistiSiti* is Kouvola's cleanliness campaign (Figure 21), where people clean up their local area alone or by volunteering together.



Figure 21. *SiistiSiti*, Kouvola

Events: 1) Vantaa Cleaning Day (Spring & Fall, 2024) had special sessions collaborated with local influencer Teemu "Eino" Oinio. These events featured food, entertainment, and other perks for participants. Vantaa Cleaning Day for Spring 2025 plans to extend its cleaning efforts with a focus on school collaborations in neighborhoods such as Aviapolis, Hakunila, and Myyrmäki. 2) Clean World Cup, Porvoo 2024, sustainable development event that addresses topics such as energy, transportation, sustainable tourism, and clothing reuse. Identifying signature environmental events in different regions provides valuable examples for organizing impactful community initiatives.

3.6.3 Service Safari Based on Benchmarking

The service safari, conducted during the summer and autumn of 2024, was an observational research method designed to understand user experiences and identify effective practices in benchmarking cases (Appendix 2). Key Observations and Insights: Both observed cases offered a highly convenient experience for users engaged in waste collection activities.

4 Service design process: Define

4.1 Stakeholder Map

A stakeholder map visually identifies and connects all stakeholders involved in the trash grabber rental service, helping to build a comprehensive understanding of each stakeholder's role, interests, and relationships within the service ecosystem (Stickdorn, 2018). This map also reveals any areas where conflicts of interest might arise, promoting informed decision-making in service planning, coordination, and improvement.

The stakeholder map clearly shows how Nurmijärvi works with various stakeholders to achieve its environmental protection goals and the interests of each group, helping to strengthen effective collaboration and strategic relationships (Figure 22).

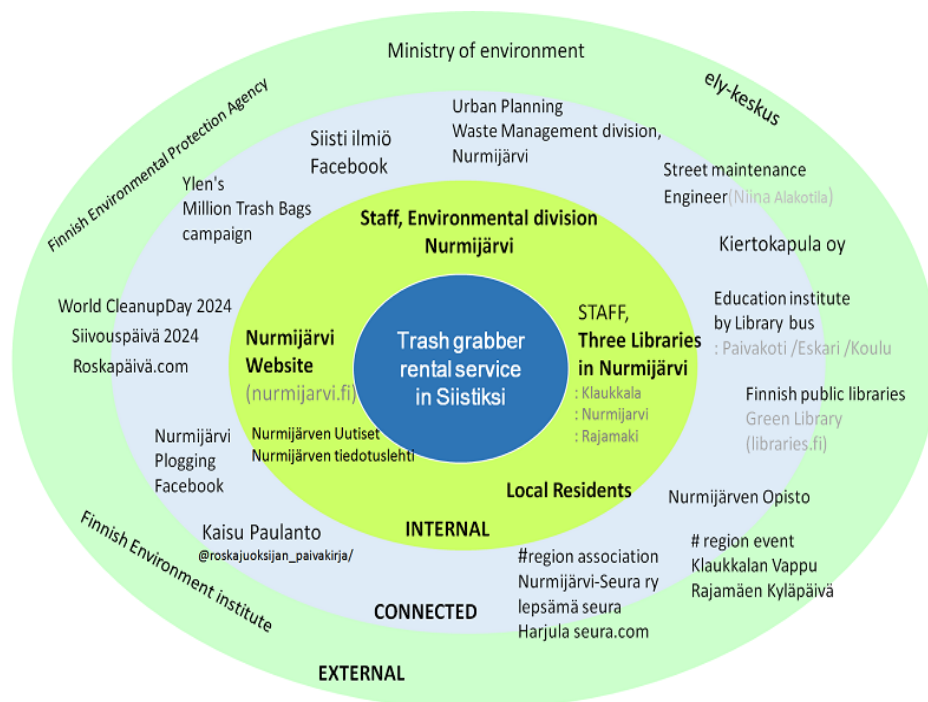


Figure 22. Stakeholder Map

1) Municipalities: Oversee public programs and environmental initiatives, ensuring the service aligns with broader community goals. 2) Libraries: Serve as the primary service provider, handling the logistics of renting and promoting trash grabbers. 3) Schools: Participate by integrating the service into environmental education, allowing students to access trash grabbers as part of hands-on, educational activities. 4) Community Organizations: Engage residents in using the service, fostering awareness through local events, campaigns, and clean-up activities. 5) Broader Society: Finnish citizens who indirectly benefit from cleaner, well-maintained public spaces, and a culture of shared environmental responsibility.

4.2 Business Model Canvas

The Business Model Canvas is a strategic tool for designing and communicating the service's business and operational model. This one-page framework organizes all essential components into a coherent structure, helping stakeholders see the service's value, its impact on users, and potential outcomes for the community (Stickdorn, 2018). The canvas includes nine key areas (Figure 23) such as value propositions, customer segments, channels, and key partnerships. By organizing these elements, the service model canvas provides a clear understanding of the service's strategic foundation and the factors that influence its overall success.

The Business Model Canvas in this context focuses on enhancing the effectiveness of a trash grabber rental service offered through libraries. It highlights the collaboration between municipalities and libraries to promote environmental cleanup initiatives, increase community participation, and achieve the shared goals of public environmental improvement and community strengthening. For sustainable operations and long-term success, municipalities are encouraged to leverage libraries as community hubs, strengthen partnerships with local businesses, and enhance digital promotion strategies.

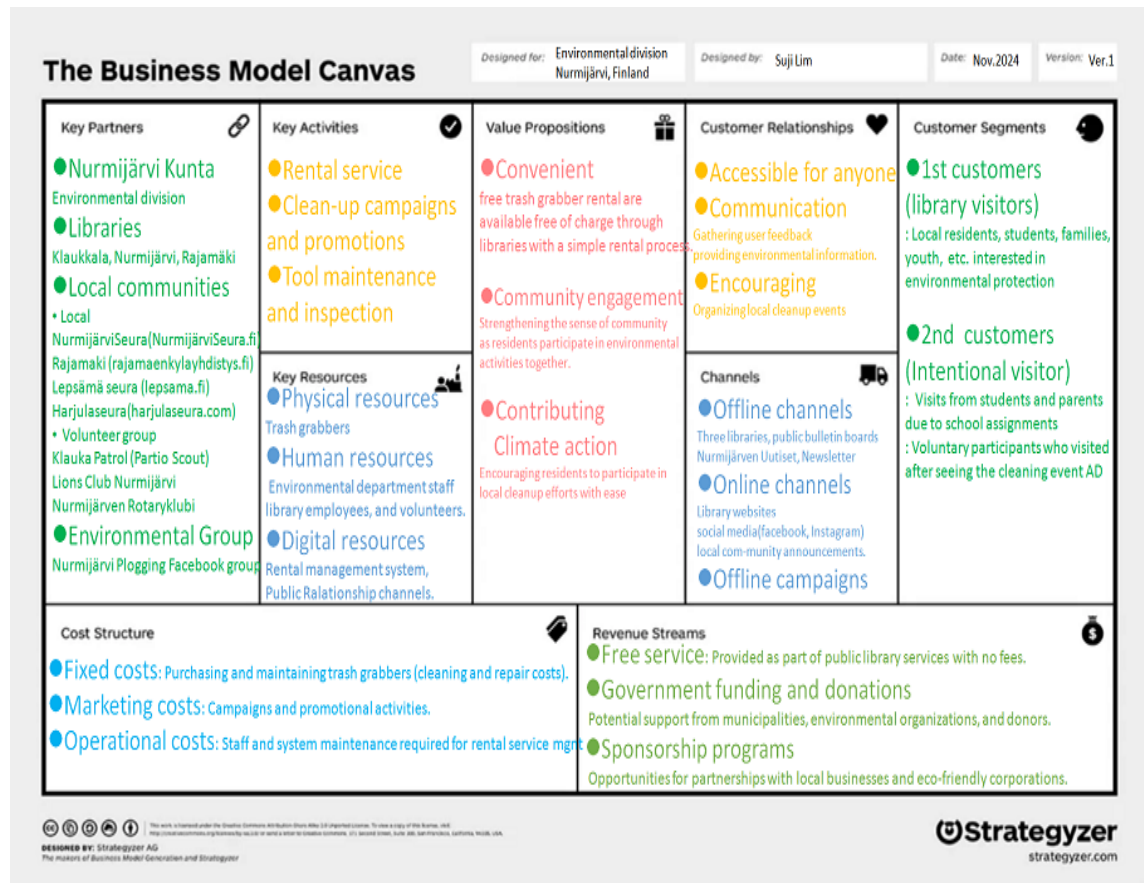


Figure 23. Business Model Canvas

4.3 Personas

Persona is a profile representing a group of people. Persona is an archetype of profile based on real research. Personas help make a similar group of people with similar service needs more understandable. This helps in understanding what drives users' engagement with the service, their attitudes toward environmental responsibility, and the potential barriers they may face (Stickdorn, 2018). By utilizing personas, the trash grabber rental service can better meet user needs, foster engagement, and overcome barriers, ultimately leading to a more impactful and sustainable initiative.

Methodology: 1) Identify Key User Groups: Based on usage patterns and service needs, determine core personas that represent the service's primary user demographics. 2) Data Collection: Gather data from observations, surveys,

and interviews to inform each persona’s characteristics and needs.3) Persona Composition: Create detailed profiles that humanize each user type, making it easier to understand their experiences and motivations.

4.3.1 Boy Persona for a Library Event-Driven Visitor

Miska is a 10-year-old boy who recently became more aware of environmental issues (Figure 24). Inspired by the May cleaning campaign, school assignments, and his family’s lifestyle, he felt motivated to make small changes toward sustainability. After attending a friend’s talk at the library, he developed a keen interest in trash picking as an active way to help the environment. During the presentation, his friend Philip shared stories about picking up trash with his parents near playgrounds, schools, sports fields, and skate parks. Miska thought, “Plogging? It’s like hunting cans for PANTTI!” Energized, he and Philip decided to give plogging a try. Miska’s story highlights his growing awareness, motivation, and commitment to taking small steps for a better future Miska.

“The courage to start Plogging”



- Name: Miska
- Age: 10 years old
- School: Harjulan koulu, Klaukkala

Additional Information:

- **Hobbies:** Soccer, reading books, playing computer games, chess, and borrowing DVDs.
- **Residence:** Lives close to a library, which is near his home.

Characteristics

- **Interest in the Environment:** Recently developed an interest in environmental issues after learning about the climate crisis.
- **Social Interaction:** Enjoys collecting cans with friends on the streets to earn money through the PANTTI deposit refund system.
- **Family’s Environmental Practices:** Observes his family’s environmentally friendly actions, such as using an electric car, having solar panels at home, and adopting a semi-vegetarian lifestyle, recognizing them as efforts to protect the environment.

Figure 24. Boy Persona (Animation by ChatGPT, 2024)

4.2.2 Mother Persona for a School Event-Driven Visitor

Kirsi is a working mom who developed an interest in sustainable living through her children’s school projects (Figure 25). During a visit to rent a trash grabber

at the library, she explored the trash grabber rental service and picked up a plogging guide brochure for more information. Her children took their sustainability homework seriously, adopting vegetarian meals and attending the library's Climate Puzzle workshop on carbon footprint calculation. Inspired by their enthusiasm, Kirsi began financially reconsidering her eco-friendly plans, like installing solar panels and transitioning to an electric car. Following the plogging guide, Kirsi and her children collected trash near their school on Saturday. Though brief, the activity gave them a strong sense of contributing to their community and the environment. Motivated by this experience, Kirsi decided to buy trash grabbers to keep at home and in the car for easy access.

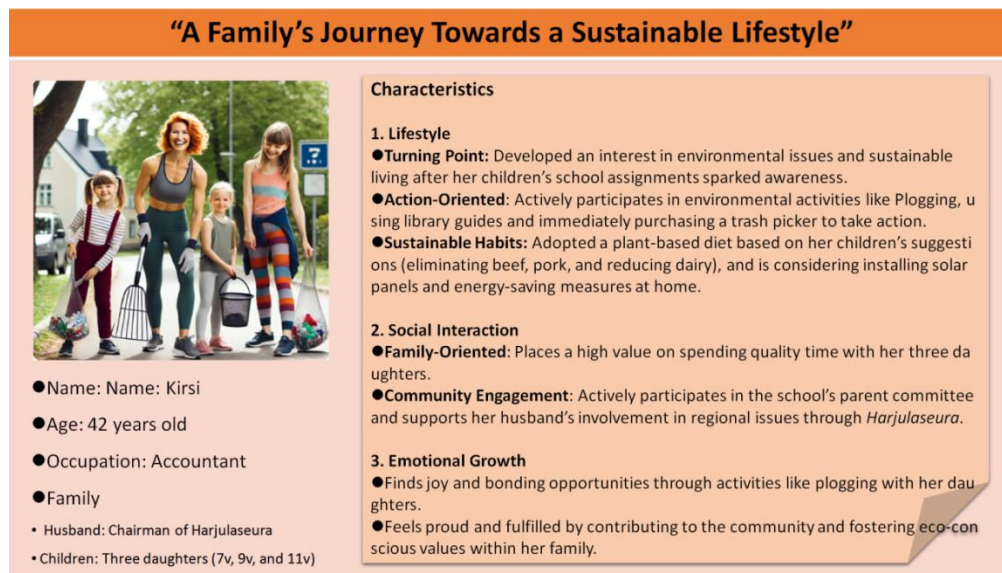


Figure 25. Mother Persona (Animation by ChatGPT, 2024)

4.2.3 Grandfather Persona for a Library Event-Driven Visitor

Seppo is passionate about community service and leadership (Figure 26). Actively participates in the Lions Club and other community events as a chairperson, finding purpose and fulfillment through interactions with residents. Takes pride in serving his community and hopes to positively impact the younger generation.

While making his regular Wednesday visit to the library, the grandfather notices a “Plogging with Your Grandchild” event advertised at the library’s central area. He reads, “Participate with your grandchild,” and sees that one attendee will receive a dining coupon for four at the Kiljava Resort restaurant, and that all participants will be given a trash grabber. Thinking about how this would bring some excitement to his usual routine, he is tempted by the idea of a free meal with his grandchild. Even if he does not win the prize, getting a trash grabber could be useful for home cleaning, and he sees this as a perfect chance to create new memories with his grandchild. The grandfather’s persona embodies his warm family affection, dedication to community, and pursuit of new experiences. Seppo is very interested in the prizes of the library’s plogging event and suggests that his son and grandson participate. But his true intention is not to see the prizes of the Haeda event as just fun, but as an opportunity to connect with family, community, and the environment.

“A Special Day for Grandpa: Memories Made Through Plogging”



- Name: Seppo
- Age: 66 years old
- Family: Wife, dog(Jari)
married Daughter(two grandchildren)
& married Son(one grandchild)

Personality

- Kind, compassionate, and approachable.
- Seeks to foster meaningful connections with family, friends, and community members.
- Wise and reflective, with a wealth of life experiences that he eagerly shares.



Connection to the library Event

The "Plogging with Your Grandchild" event perfectly fulfills all of Seppo's aspirations.

- **Environmental Protection:** An opportunity to contribute to a cleaner community while practicing responsibility.
- **Prize Motivation:** The dining voucher is an enticing chance to gift his family a special day out.
- **New Excitement:** Brings fresh energy and challenges to his previously routine days.

Figure 26. Grandfather Persona (Animation by ChatGPT, 2024)

4.2.4 Family Plogging activist Persona

Family Plogging Activists begins when the family discovers the trash picker rental service at their local library and starts plogging. What started as a simple activity in their neighborhood soon evolves into a sustainable travel practice for

family bonding. As they continue their plogging journey, they begin to share the benefits of this activity through social media, spreading the message and starting their Trash Activist movement. Drawing from their own experiences and knowledge, they aim to inspire others to embrace the power of small actions in making a big impact.

The main characters and story are as follows (Figure 27). Dad – "Eco Hero": Personality: Responsible and genuinely dedicated to environmental protection. He wants to demonstrate the importance of the environment to his children by setting an example. Mom – "Positive Energizer" Personality: Bright and full of positive energy, she sees plogging as a fun family activity that combines exercise with environmental protection, finding it rewarding. 6-year-old Son – "Little Explorer" Personality: Curious and energetic, he treats picking up trash as a kind of adventure. Goal: To become a hero who picks up the most trash. Proudly calls, "Mom, Dad, look at me!" each time he collects something. 5-year-old Daughter – "Little Fairy" Personality: Pure and imaginative, she sees picking up trash as a kind of treasure hunt. Goal: To receive praise from her parents each time she picks up trash. Feels proud when she shows off the "treasure" she's found and helps her surroundings.

"The Plogging Family Adventure: Little Heroes Making a Big Difference"



- Name: Familyplogging website owner
- Age: late 30s and children 6v and 4v
- Hobbies: Plogging, Traveling
- Residence: klaukkala, Finland

www.Familyplogging.com, [@family_plogging](https://twitter.com/family_plogging)

- **Definition: "Family + Environment"**
: Family Plogging" refers to the act of picking up trash as a family, combining the concept of 'family' and 'plogging'. As a form of climate action, it involves participating in environmental activities as a family using the tool of Plogging.
- **Slogan: "My Children's First Climate Action"**
: Meaning: The first climate action that parents introduce to their children.



Core Values

- **Environmental Protection:** Through Plogging, the family protects the local community and natural environment, continuing small actions for a sustainable future.
- **Family Unity:** Emphasizing collaboration and communication within the family, sharing eco-friendly values and meaning through shared activities.
- **Positive Influence:** Using social media and their website to encourage other parents and children to participate in Plogging, contributing to the spread of positive change in environmental protection activities.

Figure 27. Family Persona (Animation by ChatGPT, 2024)

4.4 Customer Journey Map

A customer journey map provides an overview of the user’s experience, mapping each stage of their interaction with the service from initial awareness to post-service reflection. This process highlights key touchpoints and areas for potential improvement, creating a foundation for a user-focused, optimized service experience. The customer journey map reveals the user’s perspective, showing their emotional journey and the service’s strengths and gaps. By understanding the customer’s experience, service designers can identify touchpoints where improvements would have the most impact (Stickdorn, 2018).

Family user Plogging in Customer Journey Mapping (Figures 28 and 29): The customer journey map was developed based on the ethnographic analysis in Chapter 3.3, focusing on family Plogging users, including the researcher. It outlines touchpoints related to interest in Plogging, the discovery of trash grabbers, and participation in trash collection activities. Identified touchpoints highlight areas for service improvement and provide opportunities for ideation.

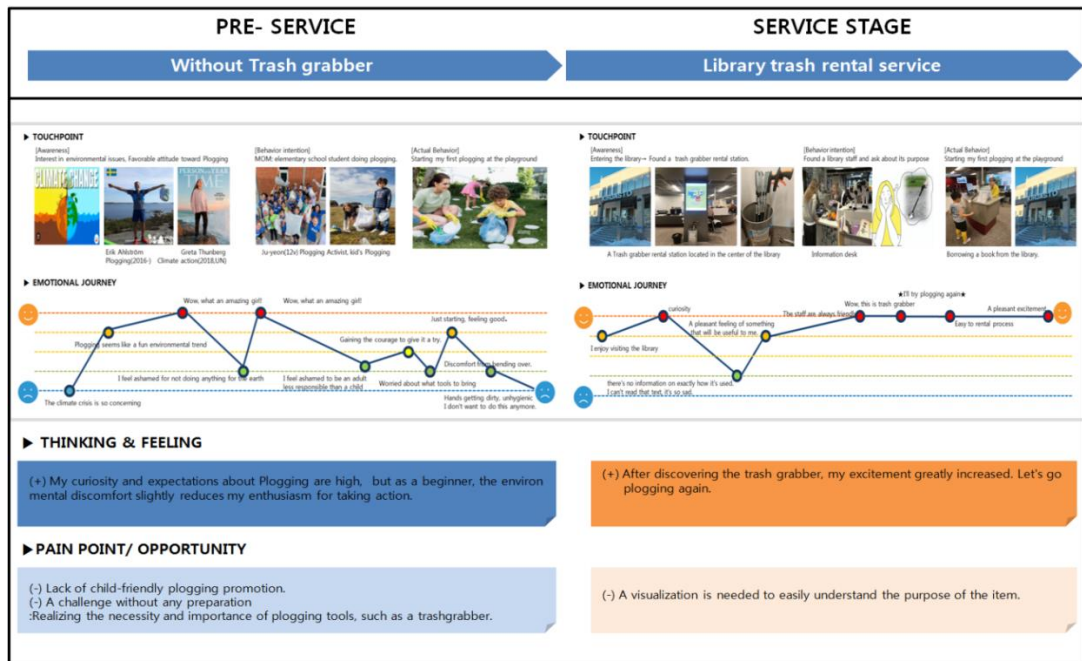


Figure 28. Customer Journey Map at Stages 1 and 2

Suji was interested in environmental issues and Plogging but thought actively participating was another matter. However, she was motivated when a close friend shared their experience, and she decided to try picking up trash around a playground she frequently visits. But her first experience was more uncomfortable than satisfying; her hands got dirty, and the posture required to pick up trash was inconvenient. She realized she needed a tool for trash collection. Later, Suji visited the library and noticed a curious box in the central area. It seemed like a tool for Plogging, similar to what she had in mind. Although she could not read the Finnish text on the poster, a library staff member helped her discover that it was a tool for collecting trash. She was excited. The rental service was simple, and the two-week period was sufficient.

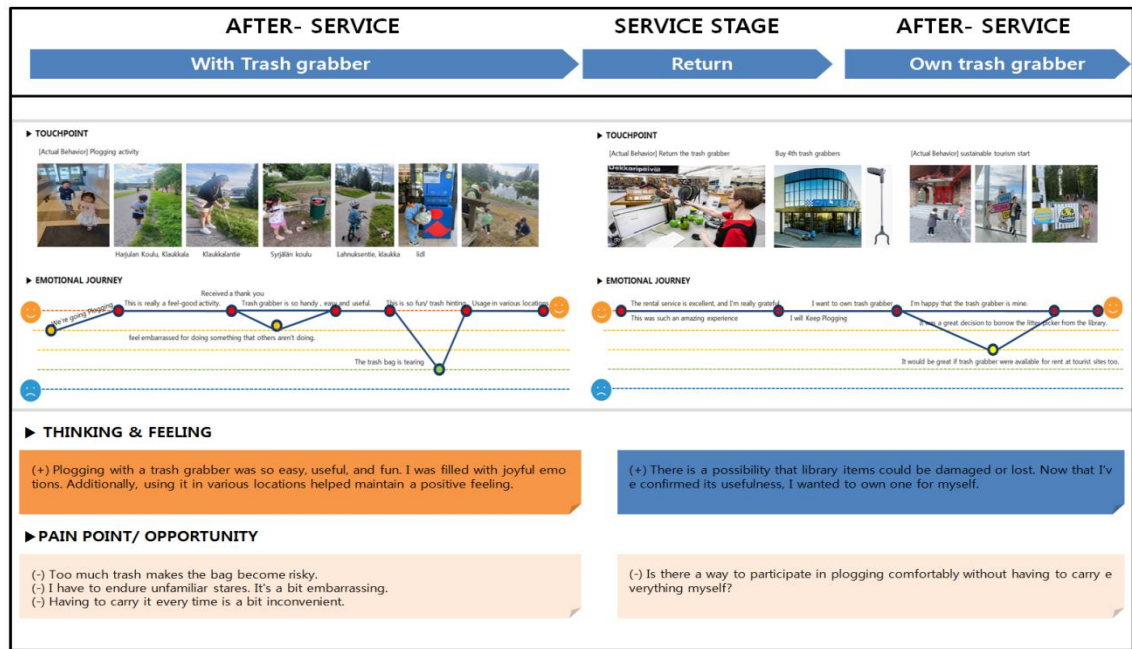


Figure 29. Customer Journey Map at Stages 3, 4 and 5

Suji started actively participating in trash collection, mainly at places she visited with her children, such as the playground, schoolyard, and park. She felt good picking up trash. Later, when going on longer trips, she kept the trash grabber in her car and continued picking up trash in other areas. Even on her summer vacation, the grabber came along. While the tool was very useful, she did experience some risks, such as the possibility of it breaking or getting lost. After

renting twice over the course of a month, she lost one of the two grabbers. Having confirmed the tool's usefulness, Suji decided to buy her own instead of renting. She purchased four grabbers—two adult-sized and two child-sized. Owning the tools provided her with a sense of psychological comfort. However, as her trash-picking frequency increased, she began to feel inconvenienced by having to carry the grabber every time. She thought it would be great if there were rental services available at places she often visited, like lakes or parks.

4.5 Service Blueprint

The service blueprint is an in-depth extension of the customer journey map, providing a layered view of the customer's experience alongside the frontstage and backstage processes that enable it. This blueprint outlines every step of the customer's journey, showing both visible actions and hidden processes that support the service (Stickdorn *et al.*, 2012).

This is a service blueprint for a trash grabber rental service at the Nurmijärvi Library in Finland (Figure 30).

- 1) Physical Evidence: Physical Evidence refers to the visible indicators of service availability and quality, such as library posters, brochures, and information kiosks, the storage of trash grabbers inside the library.
- 2) Customer Actions: Customer Actions refer to the steps taken by the customer during each stage of their service experience, from arrival to post-service feedback
- 3) Frontstage / Onstage Interactions: Frontstage refers to direct interactions between the customer and the service, such as renting a trash grabber or receiving guidance from library staff.
- 4) Backstage / Invisible Interactions: Backstage refers to Internal processes that support the frontstage activities, including inventory management and coordination between the library and municipal services
- 5) Supporting Processes: Support Processes refer to activities and resources, such as marketing and event planning, that contribute to the service's overall effectiveness.

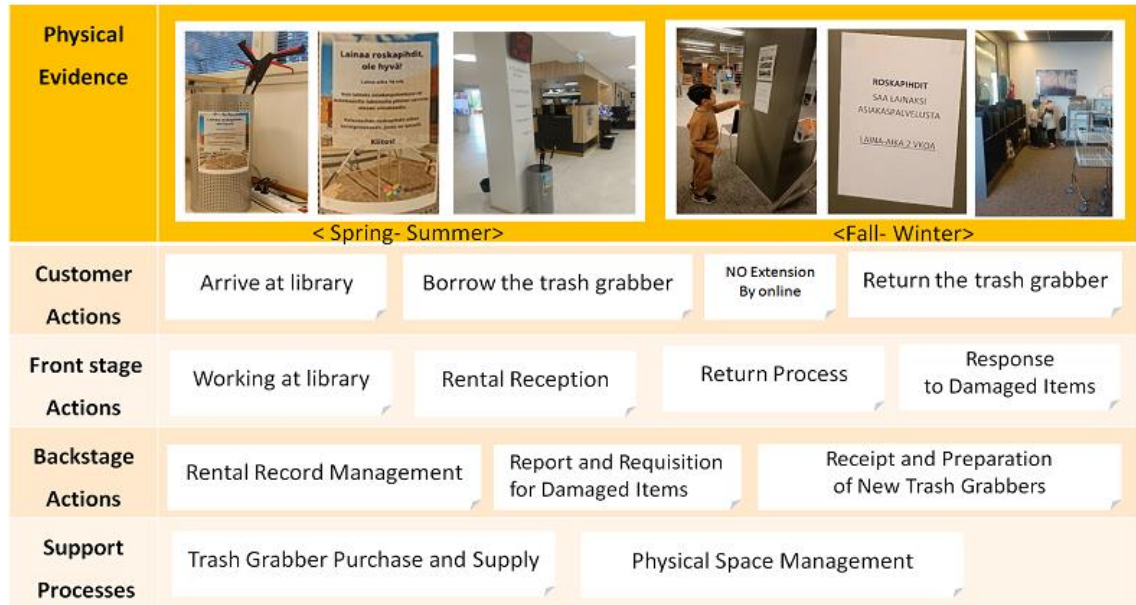


Figure 30. Service Blueprint trash grabber rental service at Nurmijärvi Library

5 Service design process: Development

5.1 Service Ideation

This stage focuses on integrating the "trash grabber rental service" with "Plogging" to create an experience that provides not only functional value but also emotional and environmental benefits to participants. The core service offering is the trash grabber rental service, accessible through public libraries. Supplementary services are categorized into enabling and enhancing services, each with specific roles. Enabling services create conditions that allow users to easily access and utilize trash grabbers, encouraging practical engagement in waste collection. Enhancing services add value to the user experience, fostering deeper connections to community and environmental responsibility.

Based on Chapters 3 and 4, several improvement suggestions were identified for Nurmijärvi Libraries. These ideas are grouped into three main concepts: library-focused enhancements, school education initiatives, and outdoor Plogging activities for community and sustainable tourism (Figure 31).

	Trash grabber	Library rental service	Plogging
Desk research		(+) Most libraries are operating (-) Trash collection service MKT and storage facilities	(+) Growing-up Plogging Trend and Growing Waste Activists
Service safari	(+) Very fun toy (+) Curiosity of children around you (+) environmental education		(+) Games like trash treasure hunt (-) Adult guidance required(-) Cigarette butt trash
Ethnography	(+) Essential for plogging (+) Hygienic and safety, ergonomics		(+) an important platform that connects environmental awareness to active behaviour.
Survey (library visitor)	(+) Very convenient (+) from rental to ownership	(-) Most visitors don't know about trash rental services.	(-) Difficulty in connecting awareness to action (-) Lack of awareness of participation, lack of time, lack of opportunity,
Interview (Plogging activist)	(+) Very convenient (-) Portability, durability, hands hurt	(+) Accessibility place (-) More MKT needed	(+) Beginning of school education (+) Need for more exposure (-) Time constraints (-) Shyness about picking up trash
Survey (library staff)	(+) Positive feedback, high satisfaction (+) Children's interest (-) Durability	(-) more MKT, more event	(+) School-linked campaign
Interview (school education)	(+) Kids love it	(-) Need to connect with library bus	(+) Active participation of children (+) Participation possible for children as young as 6 (+) Environmental activities beneficial to children
Interview (Sustainable tourism)	(+) Hotels: excellent addition to their services as part of their sustainability efforts	(+) Partnering with libraries	(+) feasible idea, excellent addition services (+) participatory and easily implementable activity (+) positive environmental impact (-) to take part in plogging/ encouraging travelers



	Trash grabber	Library rental service	Plogging
Positive	<ul style="list-style-type: none"> ■ Kids (+) Very fun toy (+) Curiosity of children around you (+) environmental education (+) Children's interest (+) Kids love it ■ Adults (+) Essential for plogging (+) Hygienic and safety, ergonomomy (+) Very convenient (+) from rental to ownership (+) Very convenient (+) Positive feedback, high satisfaction 	<ul style="list-style-type: none"> (+) Most libraries are operating (+) Accessibility place 	<ul style="list-style-type: none"> ■ Kids (+) Games like trash treasure hunt (+) Beginning of school education (+) School-linked campaign (+) Active participation of children (+) Participation possible for children as young as 6 (+) Environmental activities beneficial to children ■ Adults (+) Growing-up Plogging Trend and Growing Waste Activists (+) an important platform that connects environmental awareness to active behaviour. (+) Need for more exposure (+) Participation possible for children as young as 6 (+) Environmental activities beneficial to children
Negative	<ul style="list-style-type: none"> (-) Portability, durability, hands hurt (-) Durability 	<ul style="list-style-type: none"> ■ MKT (-) Trash collection service MKT and (-) Most visitor don't know about trash rental services. (-) Trash collection service MKT and storage facilities (-) More MKT needed (-) more MKT , more event (-) Need to connect with library bus ■ storage (-) storage facilities, need more fancy for environment 	<ul style="list-style-type: none"> ■ kids (-) Adult guidance required (-) Cigarette butt trash ■ Adults (-) Difficulty in connecting awareness to action (-) Lack of awareness of participation (-) lack of opportunity, (-) Time constraints, lack of time (-) Feel quilt (-) Shyness about picking up trash
Sustainable tourism	<ul style="list-style-type: none"> (+) Hotels: excellent addition to their services as part of their sustainability efforts 	<ul style="list-style-type: none"> (+) Partnering with libraries 	<ul style="list-style-type: none"> (+) feasible idea, excellent addition services (+) participatory and easily implementable activity (+) positive environmental impact (-) to take part in plogging/ encouraging travelers

Figure 31. Service Ideation by Summary of Findings

5.1.1 PR in Library

The primary challenge relates to the place and physical environment. According to survey results, while the trash grabbers are centrally positioned in the library, 75% of respondents were unaware of the trash grabber rental service. Observations from the service safari further revealed a lack of promotional material for cleaning events during the Siistiksi period (spring and fall) within the library.

To address these issues, there is a clear need for more visible and engaging promotional materials for the trash grabber service, along with clear instructions on their usage. The objective is to educate users on "how to use it," "where to use it," and "why it's important," thereby encouraging first-time borrowers to actively participate in Plogging during their library visits or daily routines.

Firstly, promotional posters will be used to promote the trash grabber rental service. These posters will be strategically placed throughout the library to

attract attention. Unlike text-heavy posters that often fail to capture interest, the focus will be on visual elements such as images and photographs to convey messages effectively.

Secondly, organizing library events will serve as an effective way to engage the community. A key service concept involves hosting an "Environmental Week for Kids" to build on the 2024 program and incorporate Plogging activities into the 2025 event calendar. This week-long initiative aims to raise environmental awareness and encourage community involvement in Plogging.

The event will focus on hands-on participation and will be similar to other popular events, such as "Halloween Week, 2024," where promotional efforts are concentrated over a short period. This approach will bring attention to environmental issues while offering an opportunity for the community to actively engage in Plogging activities.

The program will include Plogging-related books and literature, discussions about Plogging, a "Trash Grabber Journey" to demonstrate how the service works, a "Plogging Stamp Game" to engage younger participants, and a Plogging photo exhibition to inspire action and showcase the event's outcomes.

5.1.2 Environmental Education: "School Plogging"

A survey of library visitors and an analysis of rental statistics revealed low borrowing rates for the service, indicating a lack of customer engagement. Expert interviews emphasized the importance of involving school education as a strategy to revitalize the service. Therefore, expanding the rental service through library bus initiatives and school education programs appears necessary.

"Educational Plogging" activities target children and students, aiming to instill environmental consciousness from a young age. These activities can be carried out in schools, with the goal of teaching children about sustainability while engaging them in hands-on, meaningful action.

This initiative focuses on larger groups of students, emphasizing collective environmental education and action. Schools can hold “Plogging Days” where entire classes or grade levels go out together to clean up their local areas. These events can be integrated with environmental lessons in the classroom, where students learn about pollution, waste management, and recycling before acting in the field. Schools can also integrate Plogging into their curriculum by assigning students tasks related to trash collection, either during school hours or as extracurricular activities, such as "Plogging Homework with Family."

School-based Plogging events teach students not only how to collect trash but also the importance of reducing waste and preserving nature. These activities help students understand the broader impact of their actions on the environment and their community (Appendix 3).

5.1.3 Outside: "Anywhere, Anytime, Lainaa roskaphiti and Plogging"

This ideation involves expanding the trash grabber rental service beyond the library and into various public spaces such as beaches, parks, and forests. The service prototype provides an easy and accessible way for individuals to borrow trash grabbers in outdoor environments, enabling them to participate in Plogging (the act of picking up trash while walking or jogging). For related examples, refer to the Lahti case in Chapter 3.6.

Firstly, Plogging in natural outdoor settings like forests or beaches is encouraged. As people visit these areas for recreation, they can also engage in environmental stewardship by collecting trash (Appendix 3).

Secondly, sports club Plogging offers a solution for individuals with limited free time. Parents can be introduced to ways for students to engage in Plogging near sports fields or recreational areas during their music or sports activities. This makes effective use of waiting times while promoting environmental responsibility (Figure 32).



Figure 32. Story board about Sport activity time with sibling

Thirdly, Plogging can be integrated into sustainable travel activities. Hotels can encourage sustainability by offering trash picker rental services, similar to umbrella rentals. Tourist information centers can provide trash picker rentals to tourists, just as libraries do. Additionally, engagement events such as designated "photo zones" can be created, where visitors can participate in Plogging, take photos, and share them with local tourism boards.

5.2 Prototype and Implementation

The prototype section focuses on actualizing the service concepts and developing specific programs to activate them.

5.2.1 Library implementation

Firstly, PR posters were created and displayed throughout the summer to offer information on how to use the trash grabbers. A sample PR poster is shown in Figure 33. To avoid the monotony and limitations of traditional text-based content, the poster features a friendly child model. This visual approach demonstrates the process of renting a garbage picker, collecting trash, and

properly disposing of it, effectively illustrating how to use the garbage picker in an engaging and approachable way (Appendix 3).



Figure 33. Implementation of Updated PR poster

The posters were displayed inside the library and on the Klaukkala local bulletin board, as illustrated in Figures 34 and 35.

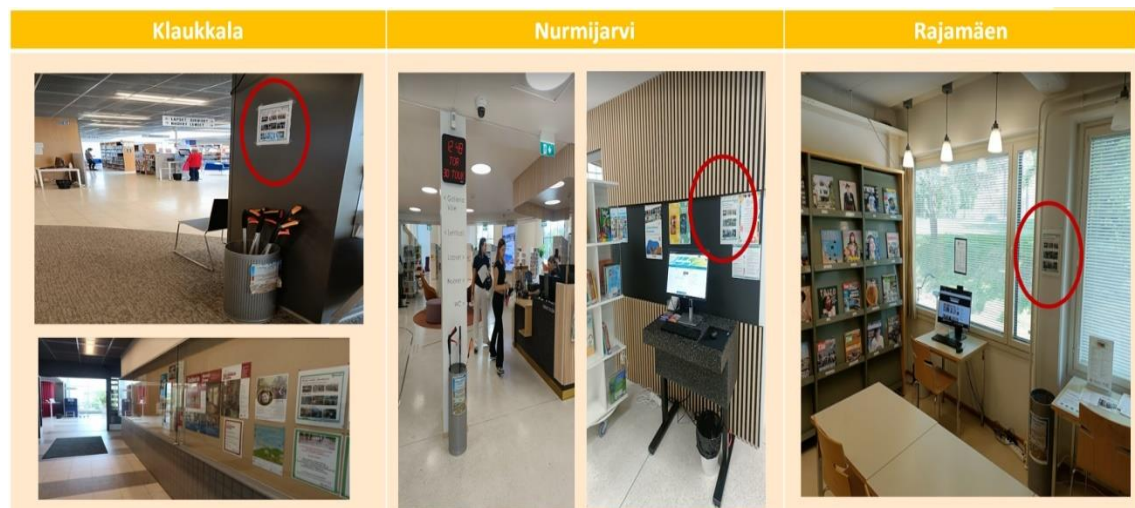


Figure 34. PR poster displayed inside the libraries



Figure 35. PR poster displayed on local bulletins, Harjula-seura klaukkala

Secondly, a **library event prototype** was developed to expand on the idea of the library's environmental events (Appendix 3). The content of the events includes Plogging-related books, talks about Plogging, a trash grabber journey, a Plogging Stamps game, and Plogging Photo Exhibitions.

5.2.2 School Plogging implementation

School Plogging is targets preschool children (eskari) and encourages them to experience Plogging through environmental education activities (Figures 36 and 37).

- Date: 14-15, November, 2024
- Place: Syrjälän eskari, Klaukkala, Nurmijärvi
- Patriciants: Hiirima class (14 kids)

The program began with environmental education activities conducted at Syrjälä Preschool in Hiirimaa prior to the Plogging week. These sessions were designed to raise awareness about waste issues and prepare the children for the activity. On the cleanup day, the children borrowed trash pickers from the Klaukkala Library and focused on tidying up their school grounds—an area they use every day. After receiving a quick safety guideline, the activity lasted approximately 30 minutes. Following the cleanup, a discussion session was held, featuring a talk by *Phillip Cho* titled “Plogging Journey with a Borrowed Trash Picker.” *Phillip*, a family plogging member and a leader of kid plogging, shared his experiences from the family plogging activities and engaged the children in a lively Q&A session. His story inspired the participants to consider incorporating similar initiatives into their lives.



Figure 36. School Plogging Implementation (Plogging Acting)



Figure 37. School Plogging Implementation (Talk and Discussion)

Results

The activity was a success on multiple fronts. The children approached the task with excitement, treating it as a treasure hunt, eagerly searching every corner of the school grounds to find and collect hidden trash. The use of trash grabbers made the experience both fun and practical, allowing the children to pick up trash hygienically and safely. These tools were especially helpful for reaching into tight spots, making the activity both enjoyable and effective.

5.2.3 Outdoor Prototype

Based on the benchmarking of outdoor Plogging stations in Lahti, as discussed in Chapter 3.6 of the Forest & Beach Plogging section. 1) Forest & Beach Plogging: trash grabber station designs using clear signage. 2) Sustainable

Tourism: Rental services at accommodations (Figure 38), recommendations on Plogging activity websites, and more (Appendix 3).



Figure 38. Sustainable Tourism Prototype

5.3 Stakeholders Feedback

The stakeholder's feedback was conducted through online survey, online meeting and email interviews with experts from three areas: 1) Libraries staff 2) Teacher for school education and 3) Developer for sustainable travel. Figures 39 and 40 illustrating the service concept stakeholders and the stakeholder frame reference are included to provide context.

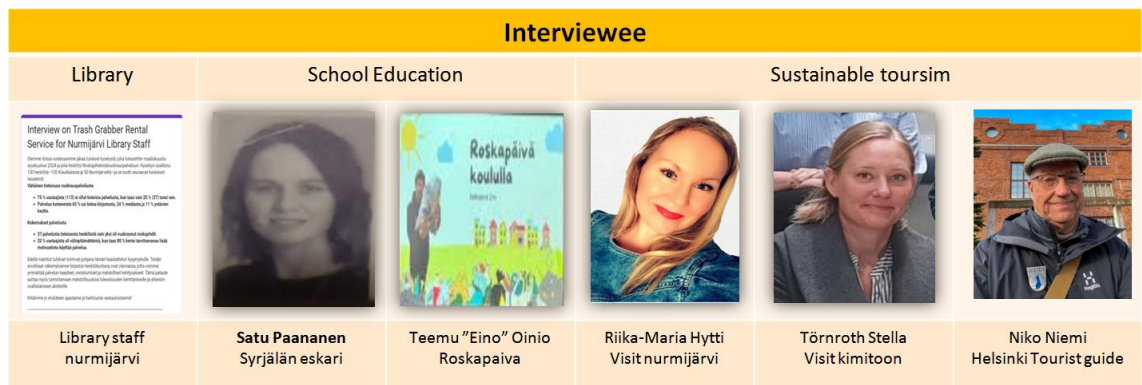


Figure 39. Stakeholders of the service concept



Figure 40. Stakeholder frame reference

5.3.1 Library

Feedback from key stakeholders, particularly library patrons and staff, is essential to understanding the effectiveness of the current service and identifying areas for improvement.

1) Current Situation

As of 2024, the trash grabber rental service statistics (Figure 41) show promising trends. With a total of 19 trash grabbers available, rental frequency has increased compared to 2023. According to users surveyed, there is a tendency for rentals to lead directly to purchases, suggesting that the trash grabber rental service is expected to attract even more users in the future.

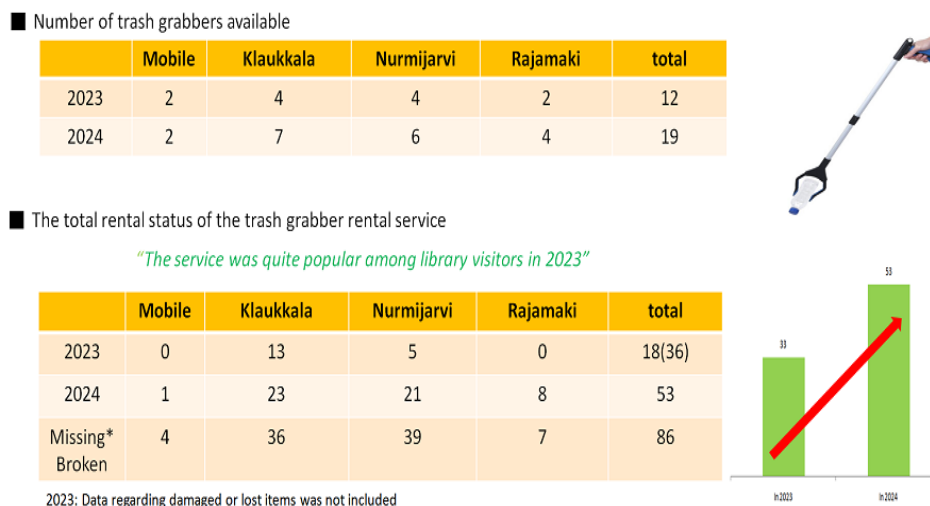


Figure 41. Statistics of Trash grabber rental service

2) Survey Results

An online survey was conducted from December 2 to December 13, targeting staff from three libraries, with 12 out of approximately 30 staff members responding. The survey addressed several key areas: reasons for low awareness and rental rates, user feedback on the trash grabber service, challenges in managing the service, reactions to the updated PR poster, and suggestions for service improvement.

The survey results are as follows (Appendix 4): First, regarding low awareness among visitors, the library staff cited insufficient advertising and marketing, as well as a tendency for visitors to show little interest in new services. Survey respondents agreed on the need for future TV advertisements. Second, regarding feedback from trash grabber users, there were no negative opinions. Borrowers expressed high satisfaction and gratitude for the service, highlighting its symbolic value for environmental preservation. Third, operational challenges included the strict return system. Unlike books, trash grabbers must be returned to the same library, and extensions cannot be made online, which was identified as a significant issue. Fourth, the summer experiment with updated posters received positive feedback from library staff. Compared to the previous version, the new posters were more visual and effective in promotion, helping visitors

activities, as well as Eino from Roskapaiva.com, who conducts lectures and Plogging-related school programs in Vantaa and other regions. These activities took place from late November to early December.

Firstly, the participants strongly recommended trash-picking activities as part of school education. Notably, Eino emphasized the value of combining trash collection with related lectures, while Satu highlighted the significance of Phillip's talk. Phillip served as a pioneering peer role model for waste management, inspiring students and facilitating a Q&A session about the trash collection activity from the previous day. This approach helped the students engage more comfortably with trash-picking campaigns. Secondly, no significant challenges were identified in collaborating on school participation activities. Eino mentioned that the only difficulty was managing personal time to visit schools. Thirdly, stakeholders reported no significant safety concerns. Guidelines were provided in advance, advising participants to avoid handling sharp or dangerous objects and to seek help from teachers or guardians if needed. Fourthly, participants expressed a desire to classify the collected trash in future activities to provide students with more practical knowledge about environmental issues. Lastly, both participants strongly recommended connecting the library's trash-grabber rental service with school and community cleaning campaigns. They believed such activities could positively influence not only students' households and communities but also have a global environmental impact.

5.3.3 Sustainable Tourism

To better utilize the trash-grabber service, proposals included incorporating Plogging activities as sustainable tourism initiatives and establishing outdoor trash-grabber rental services. Feedback and evaluations from stakeholders were gathered through emails and online meetings with three individuals: Riika-Maria Hytti, Tourism Coordinator for Nurmijärvi; Stella Tornroth, Tourism & Destination Developer for Kimitoön Municipality, who initially provided the idea for the sustainable travel service concept during a thesis seminar feedback session; and Niko Niemi, who implemented the trash-grabber rental concept in

6 Service design process: Deliver

In this chapter, the "Deliver" phase of the service design process for the Trash Grabber project is examined. This phase emphasizes implementing key strategies to extend service reach, foster greater community involvement, and ensure sustained engagement with the project's goals. The evolving target demographics are explored, as Klaukkala's population shifts, requiring adjustments to better serve the community. The chapter then addresses the development of essential hardware and software components—physical assets that support community members in engaging with trash-picking activities, alongside digital tools that spread awareness and facilitate service access. Finally, actionable recommendations are provided for the municipality and Environmental Division to ensure the project's success, with targeted promotional and event strategies to raise awareness and increase participation (Figure 44, Appendix 5).

Nurmijärvi	Siistiksi project		
	Trash Grabber 1.0	Trash Grabber 2.0	
	2023-2024	2025-2026	
Target	middle-aged and elderly people(oma)	Koulu "Koulu Plogging"	30-40's Family(adult+child) "Family Plogging"
Hardware	Trash grabber in Libraries Trash grabber Library bus	<ul style="list-style-type: none"> •Library Bus •Library Rental Group Application system •Trash grabber Wagon (new) 	<ul style="list-style-type: none"> ▪Symbol: Install outdoor trash grabber station (ex. Sport complex) ▪ Mobile service: library bus, trashgrabber wagon for event
Software	Commissioner of master thesis by Suji Lim, TUAS	<ul style="list-style-type: none"> ▪ Implementation of environmental education ▪ Talk of Plogging journey ▪Homework 	<ul style="list-style-type: none"> ▪Strengthening (AD & PR poster) ▪Hose library event_ environment & cleanness ▪ Support village event: Clean Up Day, ▪ Increasing children's participation experience through school education

Figure 44. Recommendations for Nurmijärvi Environmental Division

6.1 Evolving Target Demographic

Following the survey and user interview, the initial user base of the Trash Grabber service largely consisted of individuals over the age of 60, who rented trash grabbers mainly during spring and autumn for household cleaning tasks. These early adopters typically purchased trash grabbers afterward for home use. However, as Klaukkala experiences a demographic shift, with a growing number of families with young children, this new population group presents a promising opportunity for engagement.

By organizing Plogging events aimed at children or incorporating environmental education programs in schools, the project can foster intergenerational participation. The involvement of children naturally extends to their parents and even grandparents, creating a family-based participation model that increases community engagement in environmental initiatives. By fostering environmental responsibility in children through early education, there is potential for a long-term reduction in trashing behaviors, as they grow into more conscientious citizens. The *Siistiksi* project's overarching goal, to promote a cleaner community, aligns well with these initiatives. Shifting the focus to preventative cleanliness education and environmental stewardship can potentially achieve a more lasting impact on community habits and values.

6.2 Hardware Components

In service marketing, the hardware elements represent the tangible, physical evidence of the service, contributing to its accessibility and visibility within the community. The Trash Grabber project, launched in 2023 as part of the *Siistiksi* project, currently provides 32 trash grabbers distributed across three libraries, with two additional units available through the mobile library. This equipment facilitates community members' active involvement in environmental clean-up initiatives. However, the project is expected to enter its next stage, Trash Grabber 2.0, by 2025. This phase calls for an expansion in physical

infrastructure and availability, which will broaden community access to the trash grabber tools.

Based on findings from benchmark studies and prototype suggestions (Chapters 1.7 and 5), the following recommendations are proposed to enhance the hardware aspect of the project:

School Outreach through Mobile Libraries (library bus): The mobile library can extend the trash grabber rental service to schools, introducing children to environmental topics through educational books and hands-on participation. This approach encourages children to think about environmental protection from an early age, laying a foundation for lifelong eco-conscious behaviors.

Trash Grabber Wagons for Community Events: Drawing on successful examples like the "Trash Grabber Wagon" by benchmarking the project could adopt a mobile service model that brings trash grabbers to community events or gatherings. This would provide on-the-spot access to tools for events requiring trash collection, such as neighborhood gatherings or environmental awareness days, enhancing convenience and promoting environmental participation in a social setting.

Strategic Placement of Trash Grabber Stations: Following Lahti's approach to mobile storefronts, the municipality could place trash grabber stations in popular community spaces, particularly those frequented by young children and teenagers. For example, Monnikki in Klaukkala, a popular area for youth activities, would be an ideal location. Establishing a presence in such areas makes it easier for youth to access and participate in trash collection, fostering a sense of ownership and responsibility.

6.3 Software Components

As a relatively new initiative, the Trash Grabber project is in its introductory phase, and thus the development of supporting software has been limited.

However, insights gained through collaboration on a 2024 Master's Thesis focused on this project have highlighted several key areas for future growth. The next phase, Trash Grabber 2.0, will require software integration to maximize service functionality and user engagement.

Libraries play a pivotal role in advancing the project's goals by prioritizing digital and informational support. The following software-related strategies are recommended:

Enhanced Service Information Display in Libraries: Information about the trash grabber rental service should be prominently displayed within libraries, increasing user awareness of its availability. Clear and visible signage can help ensure that community members understand the service's purpose and how they can participate.

Plogging Brochures and Informational Materials: Providing renters with brochures or informational leaflets on "Plogging" could encourage greater involvement beyond household cleanup. While some users may only plan to use the trash grabber for personal cleaning, informational materials about Plogging and its community benefits may inspire them to engage in larger environmental initiatives. These brochures could feature details on Plogging routes, the ecological impact of Plogging, and local activities. Collaborating with the tourism department to design these materials could provide a more cohesive approach to environmental awareness, further encouraging citizen participation (Appendix 3).

6.4 Recommendations for Nurmijärvi Municipality Environmental Division

For the *Siistiksi* project and the Trash Grabber initiative to succeed and reach their fullest potential, it is crucial that the Nurmijärvi municipality and its Environmental Division invest in effective promotion and operational support. The following recommendations outline steps for increasing visibility, participation, and overall community engagement:

Enhanced Visual Branding and Digital Presence: The municipality's website could benefit from a dedicated section for the *Siistiksi* project, enriched with visually appealing symbols and images of community involvement. A strong online presence, featuring well-designed and engaging visuals, can inspire residents to learn more about the project and get involved.

Broadened Promotion of Traditional Cleaning Events: While cleaning events have historically been promoted online (via the municipality's website, local newspapers like *Nurmijärven-Uutiset*, and social media), additional physical promotion in the form of posters at key community locations would likely attract more participants. Expanding promotion beyond digital channels can help reach residents who may be less active online.

Integration with Local Community Events: Introducing trash-picking activities into traditional village union events or community gatherings during the spring and autumn cleaning periods would expose these activities to a wider audience. Residents who attend these events may be more likely to try out the trash grabber tools and participate in Plogging activities, enhancing the project's visibility and impact.

Library Support during Environmental Months: During significant environmental months such as April or May, each of the three libraries hosts its own events. Encouraging libraries to integrate Trash Grabber rental and Plogging activities into these events with a detailed guide could foster higher awareness and engagement among community members.

Collaboration with the Tourism Department for Sustainable Travel: By partnering with the tourism department to develop a unique "Walkacation" experience that incorporates trash-picking, the municipality could create a one-of-a-kind sustainable travel program. This initiative could position Nurmijärvi as a destination for eco-conscious tourists, encouraging visitors to participate in environmental efforts and providing an innovative, meaningful experience.

7. Conclusion

In this concluding chapter, key findings are synthesized, and the implications, limitations, and potential future directions of this research on library-based trash-grabber rentals and Plogging are reflected upon. The study underscores the impact of accessible tools for environmental action, like trash-grabbers, on fostering community engagement and sustainable practices. Insights gathered also inform recommendations to improve and promote the service, encouraging greater citizen participation in environmental activities.

7.1 Summary of Findings

Achieving sustainable practices and addressing the climate crisis require not only awareness but also tangible actions from citizens. This research explores the role of citizen-driven environmental practices, specifically through the act of Plogging—picking up trash while jogging—enabled by the "trash grabber" rental service offered by local libraries. Trash collection through Plogging is introduced here as an initial, accessible step for citizens to recognize, understand, and act on environmental issues, as well as to raise awareness about the climate crisis. The primary goal of this study is to assess the current trash-grabber rental service available at libraries and propose a service redesign that would allow more convenient, widespread participation in trash-picking activities. Ultimately, this would contribute to a community culture where citizens can readily take action to care for their environment.

This study was commissioned by *Aino Angervuori*, Regional Manager of the Environmental Division of Nurmijärvi, as part of the larger *Siistiksi* project, particularly within the trash grabber initiative. The objective was to rejuvenate the library's trash-grabber rental program, transforming it into a more efficient and impactful service for environmental engagement. This study employed a range of service design methods to examine and enhance the current service, which integrates Plogging into the everyday lives of library visitors. Research

methods included desk research, service safari, ethnography, benchmarking, customer journey mapping, surveys, interviews, and collaborative creation.

The study's key findings are as follows:

Service Awareness and Visibility Challenges: Despite its environmental value, the library's trash-grabber rental service lacks visibility and awareness among library visitors. Survey results showed that awareness and utilization rates of the service were remarkably low among library patrons. Service design analysis further highlighted that insufficient promotion by local authorities and the library itself, along with a lack of clear guidance on how to use the service, contributed to its low engagement.

Role as a Gateway to Climate Action: The trash-grabber rental service plays a significant role as an introductory tool, encouraging citizens to take small but meaningful actions for environmental sustainability. Finland's trash-grabber rental service is unique in that it provides a structured opportunity for residents to engage with environmental issues. Interviews with users revealed that the option to rent trash grabbers for free, especially with an initial two-week trial, was highly beneficial and often led to future purchases of the equipment. This rental-to-purchase transition indicates that the service is both beneficial for public engagement and effective in driving long-term behavioral shifts toward environmental responsibility.

Plogging's Holistic Benefits: Plogging offers extensive benefits across environmental, educational, social, community, and physical dimensions. Environmentally, Plogging contributes to a cleaner local ecosystem by removing trash. Educationally, it raises awareness among both adults and children, encouraging sustainable habits from a young age. Socially, Plogging is often practiced as a family activity, creating opportunities for outdoor bonding and strengthening family relationships. It also fosters a sense of community, as participants clean shared public spaces, reinforcing a culture of civic responsibility. Physically, the exercise component of Plogging contributes to personal health and wellness, adding another layer of value. Thus, promoting

Plogging with trash grabbers as a public service has the potential to yield numerous long-lasting benefits for participants and the community.

Proposed Service Enhancements for Broader Engagement: Several suggestions for improving the trash-grabber rental service emerged from the study, including increased promotion in libraries and online, integration with school programs, service presence at community events, wider availability in recreational spaces, and sustainable tourism initiatives. Additionally, the effective operation and expansion of the trash-grabber rental service rely on close collaboration between libraries, local authorities, and other relevant stakeholders. Although the service is municipally funded, library staff must be provided with adequate resources and support to facilitate the service. A standardized promotional approach, perhaps coordinated by a national library association, could help libraries deliver consistent information through a unified brochure or poster campaign, explaining service benefits and guiding usage.

7.2 Addressing the Research Questions

The research questions posed in this thesis are revisited below, with findings drawn from the study.

Q1. How well are residents aware of the trash grabber rental service available at local libraries? Awareness of the trash grabber rental service among residents was found to be low. Survey data indicated that most library patrons were either unaware of the service or unclear about its purpose and benefits. This lack of visibility can be attributed to limited promotional efforts by both local authorities and libraries, as well as insufficient signage or informative materials. Addressing these gaps through targeted campaigns and enhanced communication strategies would significantly improve awareness.

Q2. How can residents more effectively utilize the trash grabber rental service? Effective utilization of the service requires addressing both accessibility and convenience. Findings suggest that integrating the rental service into daily library operations, providing clear instructions on its use, and ensuring adequate availability of equipment would encourage more frequent

use. Moreover, expanding the rental service to outdoor recreational spaces and community events would make it more accessible to a broader audience, thus fostering greater engagement.

Q3. What strategies can broaden the service's reach and support more effective community waste management? Broadening the service's reach involves adopting a multi-faceted approach, including collaborations with schools to incorporate Plogging into environmental education, promoting the service through community events, and leveraging social media to reach diverse demographics. Additionally, offering the service as part of sustainable tourism initiatives can attract a wider audience, including domestic and international visitors. These strategies, combined with strong stakeholder collaboration, can establish the trash grabber rental service as a cornerstone of community-driven waste management.

Through these findings, the study highlights the importance of a user-centered approach in enhancing service design, ultimately fostering a culture of environmental responsibility and collaboration between residents and service providers.

7.3 Discussion and Key Learning

This study makes several unique contributions, academically and practically. **Academic Significance:** This study contributes a unique academic perspective by focusing on Plogging through the lens of the trash-grabber rental service available in libraries. Although Plogging emerged in Sweden in 2016 and has since grown into a global environmental movement, little research has been done on trash grabbers, particularly as a public rental service. Moreover, this study offers insight into Finland's unique position as the first country to introduce trash grabbers as a public service, filling a notable gap in the academic literature on Plogging.

Service Design Contributions: Traditional research on Plogging has focused on its physical and educational aspects, with studies often examining its physical benefits in sports or its impact as an educational tool in classrooms.

However, this study takes a distinctive approach by using service design to identify and address the obstacles that prevent wider citizen participation. Through service design methodologies, the research highlights the necessary steps that municipalities can take to create a conducive environment for citizen engagement in Plogging, adding a new dimension to the academic discussion of Plogging.

Ethnographic Research for User Insights and Market Expansion: This research utilized ethnography over 18 months to move beyond predetermined patterns, immersing itself in users' daily lives to collect firsthand experiences and emotions. This approach uncovered hidden insights that would have remained undetected through traditional methods, leading to the following outcomes: a conceptual shift in the trash-grabber rental service, along with proposals for extending its target audience. Previously, the primary users were the elderly, but the study suggests expanding to families with children and offering rentals in outdoor spaces rather than solely in libraries. By reimagining libraries as hubs for sustainable environmental actions, the value of the service increased. For example, library buses could be used not only to rent trash grabbers but also to distribute educational materials on environmental topics, creating opportunities for municipalities, libraries, and schools to collaborate on "mobile environmental education." Without ethnographic research, innovations like the outdoor rental service might not have emerged. Surveys often fall short as respondents tend to overstate their willingness to act in an idealized manner. For example, while over 90% claimed they would rent trash grabbers, the actual usage data suggested otherwise. Ethnography, by contrast, allowed for a comprehensive understanding of user behavior, fostering empathy and providing a foundation for delivering optimal user experiences.

From Trash Collectors to Environmental Activists: The study highlights a transition from simply picking up trash to fostering greater environmental awareness and activism. The ultimate goal is not just trash collection but inspiring individuals to adopt sustainable lifestyles, contributing to carbon neutrality. Over time, participants demonstrated increased efforts to embrace

environmentally friendly behaviors, underscoring the importance of direct action in fostering meaningful environmental change.

Focus on Family Participation and Immigrant Perspectives: Unlike most Plogging studies, which predominantly focus on students or group activities, this research emphasizes family-centered Plogging. It identifies unique challenges and benefits, particularly for families with children. Additionally, as the study was conducted by an immigrant, it provides a distinctive perspective on Plogging as a tool for immigrant integration, enabling meaningful community engagement. This dual contribution—environmental and socio-cultural—underscores Plogging's broader value in fostering inclusive, sustainable communities.

7.4 Limitations and Future Directions

This section outlines the challenges encountered during the study and proposes future directions to address these limitations and build on the findings.

7.4.1 Limitations

Despite the study's contributions, several constraints influenced its outcomes:

Language Barriers: The language barrier restricted the depth and breadth of desk research on topics such as library rental services, trash-picking behavior, and Plogging in Finland. Designing and implementing detailed, culturally nuanced methodologies like culture probes was not feasible due to linguistic challenges. Consequently, the study relied on auto-ethnography, which provided valuable long-term insights but lacked the cultural depth that more open-ended approaches might have offered.

Limited Aesthetic Representation: The study struggled with presenting its findings effectively through visual means. A lack of clear, well-designed visualizations diminished the impact and accessibility of the results, particularly for a broader audience.

Underutilization of Social Media: While the study explored the transition from trash collection to trash activism, plans to leverage social media platforms, such as launching a prototype homepage and accounts, were not fully realized. Challenges like organizing photo content delayed these activities, limiting opportunities to gather public feedback and foster wider engagement.

7.4.2 Future Directions

Building on this study, future research can address these limitations and explore new avenues to enhance the impact and scope of the trash-grabber project:

Collaboration with Municipalities: One promising avenue is exploring how municipalities can better engage residents in environmental initiatives. For example, surveys—both online and offline—could assess residents' awareness of municipal cleaning services, climate change, and sustainable living practices. Understanding the primary channels through which residents' access municipal information, such as feedback platforms (Solmu, n.d.), could help refine communication strategies and foster greater participation. Additionally, analyzing citizen complaints and feedback trends through platforms like Facebook could offer valuable insights into improving satisfaction with municipal services.

National Library Network Integration: At a national level, the integration of trash-grabber rental services into the activities of the Finnish Library Association or the broader library network could position libraries as pivotal spaces for environmental education, particularly for school-aged children. Such efforts could align with initiatives like the Green Library project, further reinforcing libraries as hubs for promoting sustainability.

Targeted Plogging Research: Plogging initiatives also hold untapped potential for deeper exploration. A segmented study focusing on both experienced Ploggers and non-participants could yield critical insights into participation motivations and barriers. By engaging with groups such as Facebook plogging

communities, trash activists, and library visitors, researchers could identify ways to make Plogging more inclusive and appealing.

Service Design Enhancements: From a service design perspective, the refinement of service concepts like logo redesigns, marketing efforts, and event participation strategies could create a more user-centered approach. Enhanced visibility and accessibility of Plogging-related services could encourage broader public engagement.

Personal Research Expansion: Finally, personal research ambitions include implementing and observing the prototype trash-grabber rental service in 2025 to study its real-world impact. Collaborating with municipalities, rental shops, and tourism boards to integrate services like travel-plogging could expand the service's reach. Additionally, engaging directly with the public through social media platforms could amplify awareness and participation, establishing trash activism as a significant and sustainable movement in Finland.

By pursuing these initiatives, future research can further enhance the role of trash-grabber services in promoting sustainability, fostering community involvement, and driving meaningful environmental change.

7.5 Reflections: Personal Growth and Insights

The journey of completing this project has been an enlightening, challenging, and deeply fulfilling experience, providing opportunities for both personal growth and professional development. Each stage of the project has enriched the thesis author's understanding of service design, sustainability, and the power of collaborative community efforts. The insights and guidance received from various contributors played a crucial role in shaping the project's outcomes and ensuring its relevance to both academic and practical contexts.

Support from the Commissioner: Special gratitude is extended to Aino Angervuori, the Regional Manager at Nurmijärvi's Environmental Division, for her invaluable support as the project commissioner. Her dedication and

commitment to the success of this research enabled a focus on actionable, community-centered outcomes. Her constructive feedback, insightful advice, and encouragement consistently guided the research towards addressing real-world environmental challenges. Aino's involvement ensured that service design approaches were balanced with practical considerations, effectively aligning public interest with environmental sustainability. Her role in refining the study's focus has been deeply appreciated.

Connections Within the Plogging Community: One of the most rewarding aspects of this project has been the opportunity to connect with the vibrant plogging community and other individuals dedicated to environmental action. Over the past year and a half, interactions with passionate citizens, environmental activists, and community members have been incredibly inspiring. Their willingness to share experiences and insights, combined with their commitment to making a difference, served as a constant source of motivation. These connections not only enriched the research with valuable perspectives but also reinforced the belief that small, collective actions can lead to significant environmental impact. The dedication and collaboration of this community were instrumental in driving the project forward with a heightened sense of purpose and responsibility.

Libraries as Crucial Partners: Libraries, particularly those in Klaukkala, Nurmijärvi, and Rajamäki, served as essential hubs for this research. Key activities, including service safaris, interviews, surveys, and prototype testing, were conducted with the cooperation and support of library staff. Their assistance, ranging from facilitating the posting of promotional materials to providing constructive feedback, was indispensable in shaping the research outcomes. These contributions greatly enhanced the project's practical implementation and underscored the pivotal role libraries can play in fostering sustainability initiatives.

Support from Syrjälä Pre-School, Klaukkala: Another critical component of the research was its focus on environmental education for children. Sincere

thanks are extended to Syrjälä Pre-School's manager, Minna Tuure, and educator Satu Paananen, whose collaboration brought these ideas to life. Special recognition goes to Satu Paananen for her dedicated efforts in guiding the environmental education program. Her structured approach allowed children to gain knowledge, share their experiences, and actively participate in plogging activities, making the program highly engaging and impactful. Her commitment to environmental education and community service significantly enriched this aspect of the research.

Service Design Learning at TUAS MBA: The service design program at TUAS MBA was an exceptional platform for experiencing the power of collective intelligence. Prior to this thesis, participating in various commissioner projects—ranging from Sibelius Museum, Turku City Library, Anonymous Mobile Corporate and Novia UAS Vaasa campus collaborations—helped build a strong foundation in service design methodologies and practical application. The program emphasized teamwork and multiculturalism, with colleagues sharing their professional experiences and perspectives during discussions, feedback sessions, and case studies. This nurturing environment of mutual respect and intellectual curiosity was instrumental in fostering growth and creativity.

Special appreciation is extended to lecturers Elina Vartama and Päivi Katajamäki for their outstanding guidance and dedication to the program's evolution. Their innovative approaches, including co-teaching and interdisciplinary perspectives, made each course a source of inspiration. Their insights and encouragement empowered participants to explore new ideas and deepen their knowledge. This degree program stands as a model for impactful service design education.

Guidance from Academic Advisor, Seppälä-Kaven Ulla: The thesis author owes a special debt of gratitude to her academic advisor, whose patience, wisdom, and support have been crucial throughout this journey. Their insights and constructive guidance were instrumental in helping the thesis author refine her ideas, address challenges, and maintain momentum even when the project became difficult. The unwavering encouragement and positivity they provided

allowed her to tackle each stage of the research with confidence, and their thorough feedback helped her develop a more rigorous and thoughtful approach to her work. Their consistent support and commitment to her growth as a researcher have been incredibly encouraging, and their belief in the potential of this project helped her remain focused and committed to its completion.

Closing Reflections: This project has been a transformative journey, enriching the understanding of environmental service design and fostering a deep commitment to sustainability. The challenges faced and successes achieved underscored the critical role of localized actions in addressing broader environmental issues. At the same time, the collaborative efforts of communities demonstrated the profound impact that collective action can have in driving meaningful and lasting change. The experience has instilled a strong appreciation for the interconnectedness of individual actions, community initiatives, and global sustainability goals. It has also inspired a renewed dedication to advocating for environmental responsibility and reinforced the belief that service design can play a pivotal role in creating a sustainable and equitable future.

Reflecting on this journey highlights how significantly it has contributed to both personal and professional development. The lessons learned have deepened the understanding of environmental service design, strengthened a commitment to sustainability, and emphasized the value of collaboration in community-driven efforts. This project has proven that even the smallest contributions can create meaningful change and has shown the importance of fostering collective action for the betterment of communities and the environment. Ultimately, this journey has been an enlightening and deeply rewarding experience. It has provided lasting insights and motivation to continue working in areas that prioritize both community well-being and environmental stewardship. This project has reaffirmed the belief in the transformative power of service design as a tool for creating impactful change and advancing shared sustainability goals.

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References

- Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2005): A review of intervention studies aimed at household energy conservation. *Journal of Environmental Psychology*, 25(3), 273–291.
- Ajzen, I. (1991): The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Ajzen, I., & Fishbein, M. (1980): *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Ashley, C., & Roe, D. (2002). Making tourism work for the poor: Strategies and challenges in southern Africa. *Development Southern Africa*, 19(1), 61-82.
- Ballantyne, R., & Packer, J. (2002): Nature-based excursions: School students' perceptions of learning in natural environments. *International Research in Geographical and Environmental Education*, 11(3), 218–236.
- Bitner, M. J., Ostrom, A. L., & Morgan, F. N. (1994). Service encounters: Building the foundation for a customer-focused strategy. *Service Quality: New Directions in Theory and Practice*, 34-60.
- Blomkvist, J., Holmlid, S., & Segelström, F. (2011). Service design research: Yesterday, today and tomorrow. *Proceedings of the Art and Science of Service Conference*.
- Borden, R. J., & Francoeur, R. B. (2020). *Community Engagement for Sustainability: Integrating Climate Change Solutions with Public Participation*. *Journal of Environmental Psychology*, 43(3), 233-245.
- Bramwell, B., & Lane, B. (2011). Towards innovation in sustainable tourism research? Exploring the past, present, and future of sustainable tourism. *Journal of Sustainable Tourism*, 19(4-5), 431-448.

Brymer, E., Cuddihy, T. F., & Sharma-Brymer, V. (2010). The role of nature-based experiences in the development and maintenance of wellness. *Asia-Pacific Journal of Health, Sport and Physical Education*, 1(2), 21-27.

Carrington, M. J., Neville, B. A., & Whitwell, G. J. (2010): Why ethical consumers don't walk their talk: Towards a framework for understanding the gap between the ethical purchase intentions and actual buying behavior. *Journal of Business Ethics*, 97(1), 139–158.

Chang, H., Ngunjiri, F., & Hernandez, K. A. (2013). *Autoethnography as Method*. Left Coast Press.

ChatGPT (2024). <https://chatgpt.com>

Chawla, L. (1998): Significant life experiences revisited: A review of research on sources of environmental sensitivity. *Journal of Environmental Education*, 29(3), 11–21.

Colvin, R. M., & Jotzo, F. (2021): Understanding the policy preferences of citizens: Evidence from climate change and energy transitions. *Energy Policy*, 151, 112187.

Crawford, D. W., & Godbey, G. (1987). Reconceptualizing barriers to family leisure. *Leisure Sciences*, 9(2), 119-127.

Curedale, R. (2016). *Design thinking process & methods manual*. Design Community College.

Dunlap, R. E., & Van Liere, K. D. (1978): The "New Environmental Paradigm": A proposed measuring instrument and preliminary results. *Journal of Environmental Education*, 9(4), 10–19.

Earth Day Network. (2024). Climate Action – How Our Trash Impacts the Environment. Retrieved from <https://www.earthday.org/how-our-trash-impacts-the-environment>

Ellis, C., Adams, T. E., & Bochner, A. P. (2010). *Autoethnography: An Overview*. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 12(1).

Eriksson, M., & Bäckström, Å. (2017). Plogging: Jogging and picking up trash. *Environmental Sociology*, 3(2), 101-113.

European Commission. (n.d.). *Consequences of climate change*. Retrieved from https://climate.ec.europa.eu/climate-change/consequences-climate-change_en

Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford University Press.

Finnish Ministry of the Environment. (2024). *Annual Climate Report 2024*. Retrieved from https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/165896/YM_2024_36.pdf?sequence=1&isAllowed=y

Goldberg, M. H., van der Linden, S., Maibach, E. W., & Leiserowitz, A. (2020). Social norms motivate climate action across age groups. *Nature Climate Change*, 10, 964–969.

Goldenhar, L. M., & Connell, C. M. (1993). Understanding and predicting recycling behavior: An application of the theory of reasoned action. *Journal of Environmental Systems*, 22(1), 91–103.

Gössling, S., & Hall, C. M. (2019). *Sustainable Tourism: A Global Perspective*. Routledge.

Grossman, G. M., & Krueger, A. B. (1995). Economic growth and the environment. *The Quarterly Journal of Economics*, 110(2), 353–377.

Helsinki Plogging Club. (2017-). Organizing local Plogging events in Helsinki: A community-led movement. Retrieved from <https://www.facebook.com/HelsinkiPloggingClub>

Hogg, M. A., & Vaughan, G. M. (2018). *Social Psychology* (8th ed.). Pearson Education.

Honey, M. (2008). *Ecotourism and Sustainable Development: Who Owns Paradise?* Island Press.

IPCC. (2021). *Intergovernmental Panel on Climate Change: Sixth Assessment Report: Climate Change 2021 - The Physical Science Basis*. Retrieved from https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf

Jackson, E. L. (2000). Will research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research*, 32(1), 62–68.

Jansson, A. (2022). Public Participation in Sustainable Development: A Case Study of Finnish Municipalities. *Sustainable Development Studies*, 12(1), 27–45.

Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Prentice-Hall.

Leonidou, C. N., Leonidou, L. C., & Kvasova, O. (2013). Cultural drivers and trust outcomes of consumer perceptions of organizational greenwashing. *Journal of Business Ethics*, 114(2), 263–277.

Lepistö, Ella. (2024). "Rosk pussi päivässä pitää dystopian loitolla!" Etnografinen tutkimus roska-aktivismista Suomessa. *University of Tampere*.

Loureiro, S. M. C., Guerreiro, J., & Ali, F. (2022). Green consumer behavior in tourism: Plogging as a sustainable practice. *Sustainability*, 14(7), 4031.

Martínez-Mirambell, N., Masip, M., & Domènech-Abella, J. (2023). Plogging in education: Enhancing environmental awareness and physical activity in students. *Environmental Education Research*, 29(2), 127–143.

Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). Identifying effective climate change education strategies: A systematic review of the research. *Environmental Education Research*, 25(6), 791–812.

NetZeroCities. (2024). *Citizen Engagement for Climate Action*. Retrieved from <https://netzerocities.eu/2024/05/13/citizen-engagement-for-climate-action>

Nolan, J. M. (2021). Social norms and environmental behavior. *Current Opinion in Behavioral Sciences*, 42, 88–93.

Nurmijärvi Municipality. (2023). Siistiksi Project: Community Clean-Up Initiatives in Nurmijärvi. Retrieved from <https://www.nurmijarvi.fi/kuntalaisen-palvelut/maankaytto-ja-liikenne/kadut-ja-tiet/siistiksi/mika-siistiksi-projekti/>

Ostrom, E. (2010). Polycentric systems for coping with collective action and global environmental change. *Global Environmental Change*, 20(4), 550–557.

Plogging.org. (n.d.). The origins and growth of the plogging movement. Retrieved from <https://www.plogging.org>

Polaine, A., Løvlie, L., & Reason, B. (2018). *Service Design: From Insight to Implementation*. Rosenfeld Media.

Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard Business Review*, 89(1/2), 62–77.

Raghavan, R. (2020): Health and environmental benefits of plogging: A holistic perspective. *Journal of Public Health Research*, 9(4), 512–521.

Richards, G. (2018). Cultural tourism: A review of recent research and trends. *Journal of Hospitality and Tourism Management*, 36, 12-21.

Routio, J. (2024). *The Finnish waste management system - role of municipalities, role of companies*. Ministry of the Environment. Retrieved from https://kliimaministerium.ee/sites/default/files/documents/2024-12/JohannaRoutio_The%20Finnish%20waste%20management%20system.pdf

- Salsabila, L., Lodan, K. T., & Khairina, E. (2023). Public Engagement Impact on Sustainable Waste Management in Indonesia: Examining Public Behavior. *Jurnal Administrasi Publik (Public Administration Journal)*, 13(2), 158-178.
- Scheyvens, R. (1999). Ecotourism and the empowerment of local communities. *Tourism Management*, 20(2), 245-249.
- Schultz, P. W. (2000): Empathizing with nature: The effects of perspective-taking on concern for environmental issues. *Journal of Social Issues*, 56(3), 391–406.
- SiistiBiits (2014). SiistiBiits Beach Cleanup Initiative: Bringing communities together for cleaner beaches. Retrieved from <https://www.siistibiitsi.fi>
- Solmu. (n.d.). *Solmuun - Nurmijärvi Municipality's feedback and online service*. Solmu. <https://solmu.nurmijarvi.fi/>
- Stebbins, R. A. (1997). Serious leisure and well-being. In *Pathways to well-being*. Springer.
- Stern, P. C. (2000): Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407–424.
- Stickdorn, M. (2018). *This is service design doing: Applying service design thinking in the real world*. O'Reilly Media.
- Stickdorn, M., & Schneider, J. (2012). *This is service design thinking: Basics, tools, cases*. Wiley.
- Teixeira, J., Patrício, L., Nunes, N. J., Nobrega, L., Fisk, R. P., & Constantine, L. (2012). Customer experience modeling: From customer experience to service design. *Journal of Service Management*, 23(3), 362-376.
- Thøgersen, J. (2018): Pro-environmental behavior: Theories and strategies. *Journal of Environmental Psychology*, 55, 1–8.

Tosun, J., & Schoenefeld, J. J. (2017): Collective climate action and networked climate governance. *Global Environmental Politics*, 17(1), 111–120.

Turku City Library (2020). Borrow the garbage tongs – keep Turku clean! Retrieved from https://www.turku.fi/uutinen/2020-10-05_lainaa-roskapihdit-pida-turku-siistina

UN (2019). Greta Thunberg and Fridays for Future: A Global Movement. Retrieved from <https://www.unep.org/championsofearth/laureates/2019/fridays-future-movement>

UNEP (2021). *The Peoples' Climate Vote*. Retrieved from <https://www.undp.org/publications/peoples-climate-vote>

UNEP (2020). United Nations Environment Programme. *Emissions Gap Report 2020*.

UNEP (2018). Plogging: The eco-friendly workout trend that's sweeping the globe. Retrieved from <https://www.unep.org/news-and-stories/story/plogging-eco-friendly-workout-trend-thats-sweeping-globe>

UNFCCC (2015). United Nations Framework Convention on Climate Change. *The Paris Agreement*. Retrieved from <https://unfccc.int/process-and-meetings/the-paris-agreement>

UNWTO (United Nations World Tourism Organization). (2019). *Sustainable development of tourism*. UNWTO Publications.

Vermeir, I., & Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of Planned Behavior and the role of confidence and values. *Ecological Economics*, 64(3), 542–553.

Vidal-Matzanke, P., & Vidal-González, J. (2022). Plogging: Exploring the socio-environmental dimensions of a new leisure activity. *Leisure Studies*, 41(3), 345-358.

Weaver, D. B. (2006). *Sustainable tourism: Theory and practice*. Elsevier.

Wetter-Edman, K., Sangiorgi, D., Edvardsson, B., Holmlid, S., Grönroos, C., & Mattelmäki, T. (2014). Design for value co-creation: Exploring synergies between design for service and service logic. *Service Science*, 6(2), 106-121.

White, K., Habib, R., & Hardisty, D. J. (2019). How to shift consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing*, 83(3), 22–49.

Wu, J., & Otsuka, T. (2021). The impact of sustainability education on pro-environmental behavior: Evidence from university students. *Journal of Cleaner Production*, 280, 124403.




Zero Waste Finland. (2018). Zero Waste initiatives and their role in sustainable community action in Finland. Retrieved from <https://www.zerowastefinland.fi>

Zomerdijk, L. G., & Voss, C. A. (2010). Service design for experience-centric services. *Journal of Service Research*, 13(1), 67-82.

Appendix 1. Commissioner introduction and meeting

Nurmijärvi Municipality, Environmental division		1st seminar(11.2023)	
Environmental division	★ Klaukkala Library★ (04.2023)	User experience (summer, 2023)	Want to Influence "BOOST Trash grabber"
Siistiksi-projektiä (2016-current)	Trash grabber Project (2023-current)		
			

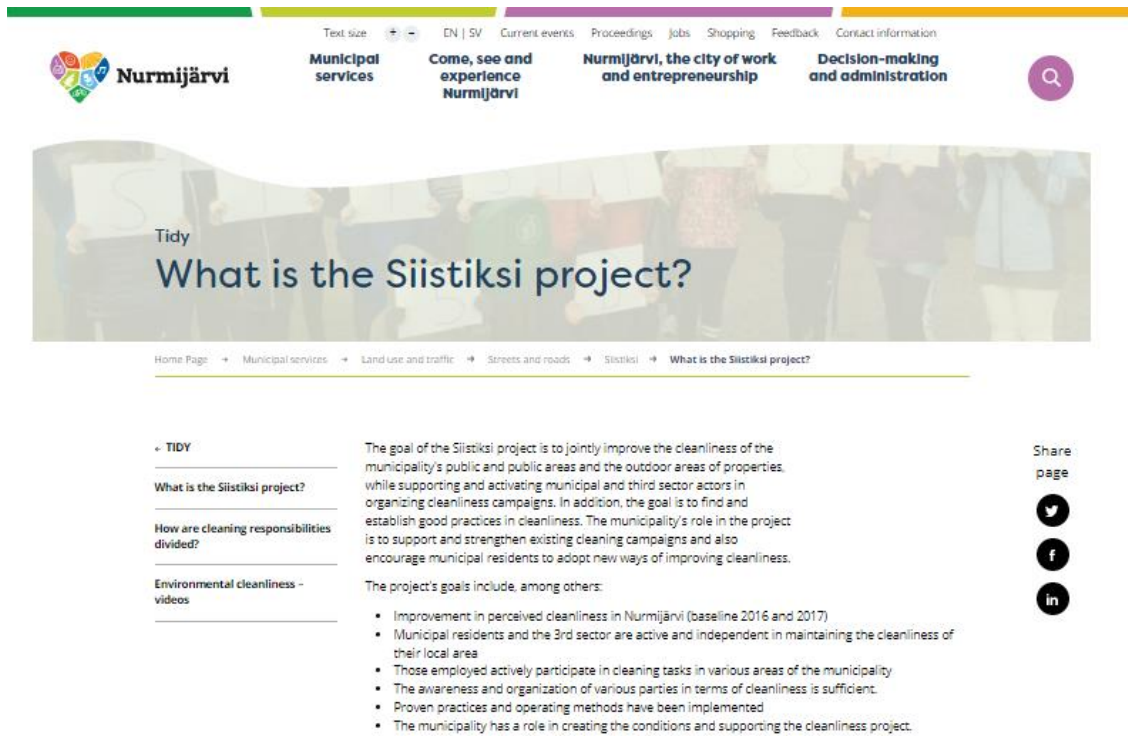
Nurmijärvi kunta, Environmental division						
2 nd seminar(03.2024)	Survey (03, 2024) workshop	commissioner 1 st meeting (05.2024)	Prototype implementation (1) (Summer, 2024)	Survey (summer, 2024)	User experience (summer, 2024)	commissioner 2 nd meeting (09.2024)
						

Nurmijärvi kunta, Environmental division		
Prototype implementation(2) Koulu Education (Agu-Nov, 2024)	Stakeholder feedback (Nov-Dec, 2024)	3 rd Seminar (11.2024) 3 rd meeting (12.2024)
		

Appendix 2. Service design process: Discover

2.1 Desk research

Nurmijärvi Cleaning Task (*Siistiksi* project) and PR channel



2.2 Service safari

1) Library

Location type of the trash grabber service in the library



Evaluation of the trash grabber service in the library

	Name	Size	Easy to find (ability discover)	Availability	Storage place	Advertisement (poster, brochure)
Nurmijarvi	Klaukkala	M	●	●	open	●
	Nurmijarvi	M	X	●	Close	X (But in Office)
	Rajamäki	S	X	●	open	X
ASKI	Turku city	L	X	●	Close(in Office)	X (But in Office)
HELMET	Iso omena	L	X	●	Close(cabinet)	X
	Sello	L	X	●	Close(in Office)	X
	Kannelmaki	M	X	●	Close(in Office)	X
	Pohjois-Haagan	S	X	●	Close(basement)	X
	Etelä-Haaga	S	X	●	Open(cabinet)	X

2) Kid Plogging

Different ways of utilizing kid Plogging activities



- Forest: Walk + Pick up trash + picking berries, mushroom
- Bicycle + Picking up trash
- Playground : Pick up trash + play
- Beach: Pick up trash + swimming + playing in the sand
- Camping : morning walk + Pick up trash
- Go for a walk : Pick up trash + walk
- City tour travel : morning Pick up trash+tour

(+) Trash grabbers viewed as a "toy tool" for kids



Lofoten Beach Camp, Norway



Lejonparken, uusikaupunki, Finland

(+) Community Encouragement (Ice Cream Gift, Praise for Good Deeds)



The staff gave ice cream to the children.



You are doing a very good job!!!!

Santa Claus Village, Rovaniemi, 07.2023

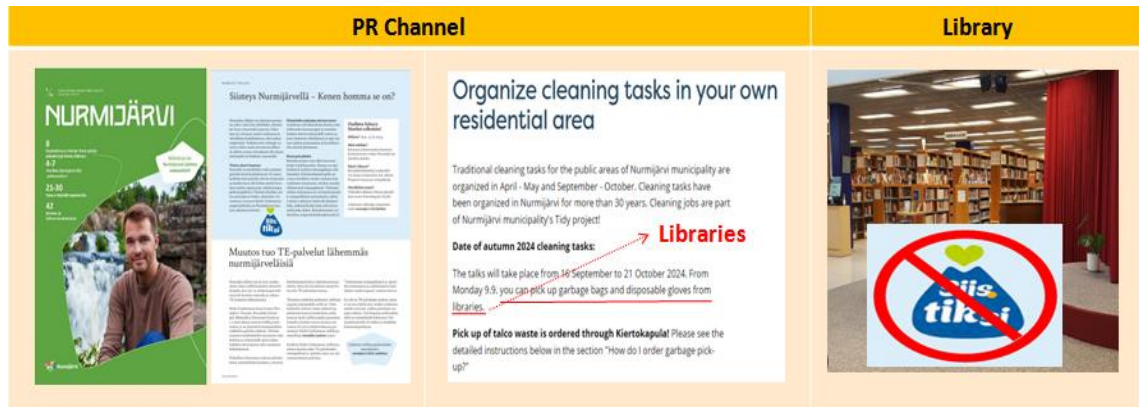
(-) Children picking up cigarette butts

Cigarette butts picked up by children

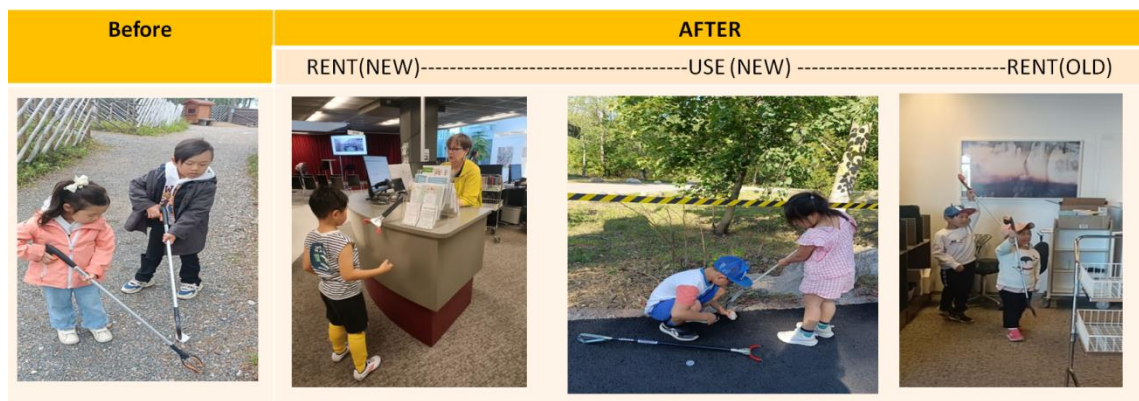


3) Nurmijärvi Cleaning Task

(-) Lack of Information Signage at library



(-) New trash grabbers are not child friendly



(+) New trash bins and cigarette butt trays in Klaukkala



(+)New campaign participation



2.3 Auto-Ethnography

Auto Plogging journey






(-) Small and minor Trash at school



(+) Evolving Participation in Environmental Activities

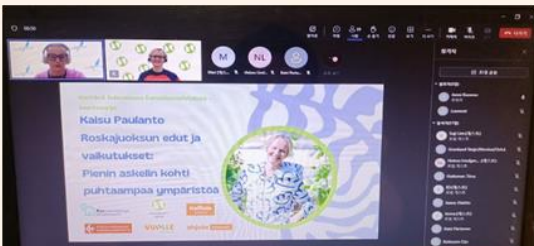

① Policy Recommendations

Find the suggestion	Give feedback to the municipality	Municipality's answers
		

② Sustainable Lifestyle Acceleration Participation (March-May 2024)

Sustainable Lifestyles Accelerator		
Guide Workshop(03.2024)	Action Period	Feedback workshop(05.2024)
		

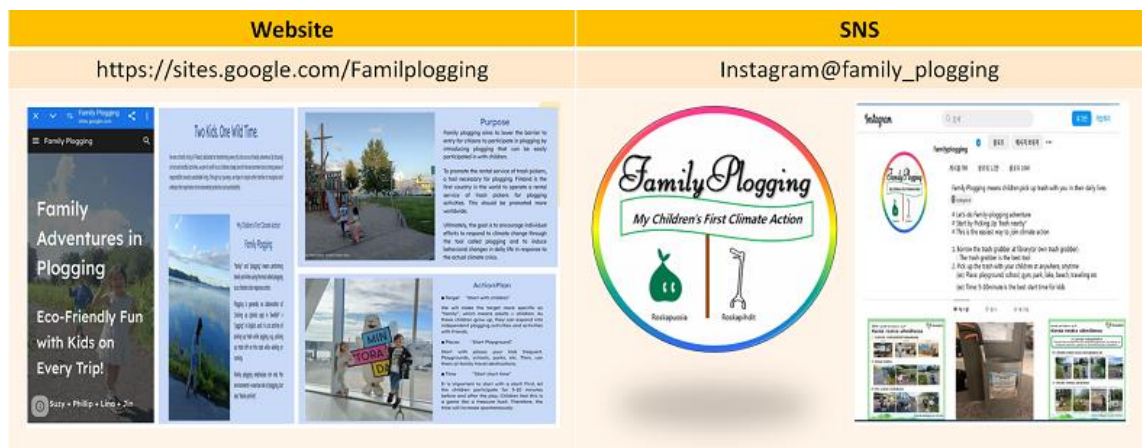
③ Plogging Lecture Participation (25. March 2024)

The Advantages and Effects of Garbage Collection: Small Steps Towards a Cleaner Environment	
Lecture	Discuss
	

④ Community Plogging Events (7. September 2024)



⑤ Sharing Model Cases for Environmental Inspiration(current-09.2024)



2.4 Survey questionnaire

Increase awareness about the service from this survey



	ID			
Lainaa roskapihdit kirjastosta ♥				
K1. Kuinka kiinnostunut olet ilmastonmuutoksesta (ilmastokriisi)? <input type="radio"/> Kiinnostunut <input type="radio"/> Ei kiinnosta				
K2. Onko Roskien kerääminen hyödyllistä toimintaa ympäristöllemme? <input type="radio"/> Kyllä <input type="radio"/> Ei				
K3. Kiinnostaako Roskien kerääminen(tai Plogging)? <input type="radio"/> Kyllä <input type="radio"/> Ei <input type="radio"/> Minä en tiedä				
<table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>				
K4. Tiesitkö, että kirjasto tarjoaa "Lainaa roskapihdit" -palvelua? <input type="radio"/> Kyllä (→K4. 1) <input type="radio"/> Ei (→ K5)				
"Numijärven kirjastoista on voinut lainata roskapihtejä huhtikuusta 2023 alkaen"★				
K4. 1 Mistä sait tiedon? <input type="radio"/> kirjastot <input type="radio"/> media (TV, sanomalehdet jne.) <input type="radio"/> jne. [_____]				
<table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>				
K4. 2 Oletko lainannut roskapihdit kirjastosta? <input type="radio"/> Kyllä (→A&B) <input type="radio"/> Ei (→C)				
A. Mikä sai sinut lainaamaan roskapihdit? [_____]				
B. Aiotteko jatkaa roskien keräämistä? <input type="radio"/> Kyllä <input type="radio"/> Ei				
C. Miksi et lainannut? <input type="radio"/> Tiesin sen, mutta en ollut kiinnostunut keräämään roskaa. <input type="radio"/> Ei ollut erityistä mahdollisuutta.				
<table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>				
K5. Jos saisit mahdollisuuden, lainaisitko roskapihdit kirjastosta? <input type="radio"/> Kyllä <input type="radio"/> Ei <input type="radio"/> Minä en tiedä				
K6. Kuinka vanha olet? <input type="radio"/> 11-19 <input type="radio"/> 20-29 <input type="radio"/> 30-39 <input type="radio"/> 40-59 <input type="radio"/> 50-59 <input type="radio"/> 60-				

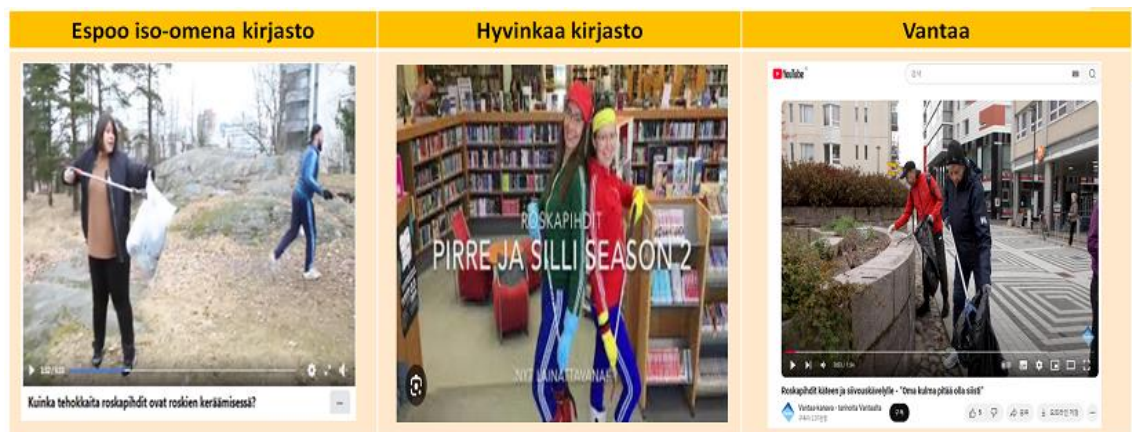
2.5 Benchmarking

1) Library

Hardware: Stand/storage of trash grabber



Software: PR poster of trash grabber, Event material





2) Municipality

Hardware: Roskapihtilainaamo, Lahti



Software: Kouvola City cleanliness work(Kouvola.fi)

Kouvola.fi



Nice Siti

Siisti Siti

Siisti Siti is a cleanliness campaign created by the Kouvola Sustainable Development Network (Kerko). The purpose of Siisti Siti is to clean up the environment with a cheerful spirit, working together. This means collecting garbage from the ground to the trash, sorting garbage or, for example, raking the yard. Siisti Siti can also be cleaning up indoor spaces, for example cleaning out a warehouse, organizing a goods exchange event or a yard sale. Although Siisti Siti focuses on cleaning up places, ecology and sustainable development are part of the idea: useful, but useless items are put into circulation.

The Siisti Siti campaign is not a nature conservation campaign, although preventing littering or cleaning up litter is. Therefore, for example, *invasive species* campaigns do not necessarily fall under the Siisti Siti campaign.





Pidetään Kouvola siistinä! Täällä on käviään suurimpaan siivokseen...



Vantaa city cleanliness work

Cleaning Day in Vantaa, September

Vantaan syyskuu Luonto ja ympäristö #siivoussyyskuu #ostu

- Myyrmäki 10.9.**
 - In Myyrmäki, cleaning workers were especially wanted in the center of Myyrmäki and the station area. Cleaning jobs will be held on Tuesday, September 10, from 4 to 6 p.m. The starting point is Paalutori. The Myyrmäki housing estate is included in the cooperation.
- Hakunila 14.9.**
 - In Hakunila, cleaning cloths were especially requested for the corners of the shop. Cleaning jobs will be held on Saturday 14.9. In connection with the application day, 10:30 a.m.-2 p.m. Hakunila Day is organized at Hakunila Ostar (Laukkarinne 4).
- Aviapolis 26.9.**
 - In the large areas of Aviapolis, taluks were especially wanted in Pakkala and Kartanonkoski. Cleaning jobs will be held on Thursday, September 26, from 3 to 6 p.m. The talks start in the yard of the Pakkala youth farm (Ylätontie 35).

All the equipment needed for cleaning tasks can be found on site.

Take part in the cleaning challenge on Facebook



Siivoussyyskuun talkoisiin osallistuvat voivat jakaa kuvia omista siivoustalkoistaan Instagramissa hashtagilla #siivoussyyskuu. Kuvaan voi tagata Vantaan kaupungin ja Roskapäivän tilin. Kuvia jakavat osallistuvat arvontaan, jossa palkintona on 50 € ravintolalahjakortti ja vapaalippuja kaupungin liikuntapalveluihin.

Ohjeet:

- Ota kuva omista talkoistasi
- Jaa kuva Instagramissa hashtagilla #siivoussyyskuu.
- Tagaa halutessasi @vantaankaupunki ja @roskapaiva
- Voittajin otetaan yhteyttä Instagramin kautta lokakuussa 2024



Porvoo city cleanliness work

Clean World Porvoo 2024

CLEAN WORLD PORVOO

CWP2024

19 / 9 / 2024

Moderattorit:
 Marko Enberg, Vuosimaan päättämättä
 Sanna Pääjärvi, kestävän kehityksen asiantuntija, Porvoon kaupunki

Pääteemat ja ohjelma:

Tilaisuuden avaus klo 13:00

- Joni Pihlakivi**, Porvoon kaupunginjohtaja
- Arto Saven**, työministeri
Virtuaalinen lausunnun luovutusajaksi

Energia tyji ja tulevaisuudessa klo 13:40

- Jenna Kerthä**, johtaja, Energiamuutos (ET) ja jatkamattomia, EWP (Eura Next Power)
Mitän Sulooppa pääsee eroon töistä ja päästöt maahan peremmiksi?

Porvoo ja virtaät vetä klo 15:00

- Tuomas Kähkönen**, vastuullisuusjohtaja ja johtamattomien
Vetäen muu Kansainvälisen
Tutkimuslaitoksen johtaja
- Olli Ervasti**, johtaja, osuuskunta vety, Nieme Oyj
Virtaan vetäen Kijälän
- Pekka Pihlman**, johtaja, Energy Sourcing & Business Development, Pika Power
Porvoo on virtaan vetäen tulevaisuuskaupunki

Kesä- ja matkailu klo 16:00



CWP2024

CLEAN WORLD PORVOO
VAATTEIDENVAIHTOPÄIVÄ
KLÄDBYTARDAG



Ennen kuin lähdet pois on tärkeä muistaa ottaa pois kaikki vaatteet ja kassat. Ennen kuin lähdet pois on tärkeä muistaa ottaa pois kaikki vaatteet ja kassat.

Service Safari Based on Benchmarking

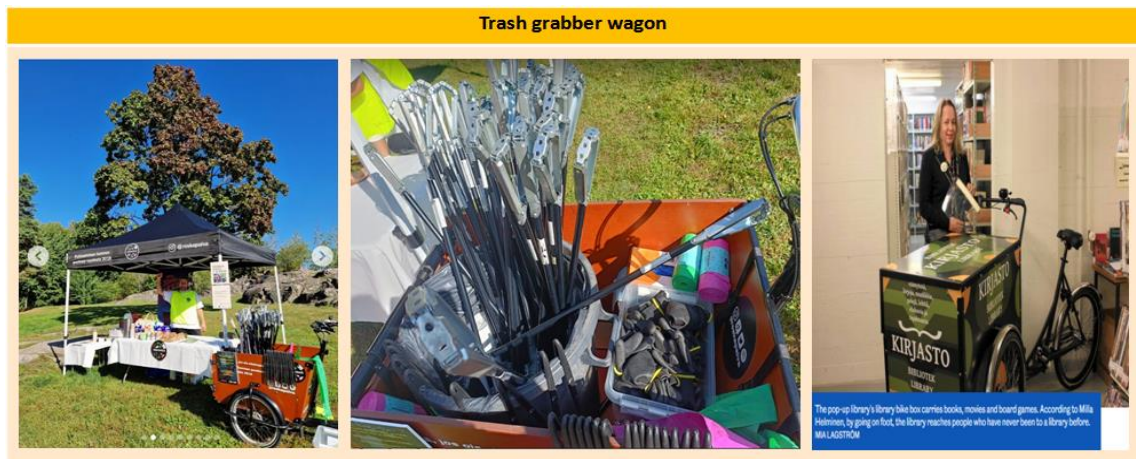
	Free trash-bag station (Tikspac), Nokia	Roskaphiti lainaamo, LAHTI
Target	When we have own trash grabber, easy to access for small trash	When we miss the trash grabber outside, it is very convince
		

	Clean day, Vantaa	Roskapäivä, Helsinki
Target	People who want to voluntarily participate in picking up trash	
		

Appendix 3. Service design process: Development

3.1 Library Prototype

1) Hardware: Trash grabber wagon by roskapäivä





















2) Software: library event contents



Plogging Brochures at library



3.2 School Prototype: Guide of school Plogging for teacher

Eskari Plogging										
Objective	<ol style="list-style-type: none"> To conduct a pilot test of a trash grabber rental service for eskari/koulu students To experience short-term participation about pick up the trash 									
Method	<p>We can pick up trash around the school area (include Phillip parents as a guardian)</p> <ul style="list-style-type: none"> • Date: November (Preferably as early as possible due to the snow weather) • Place: Outdoor activities(ex) syrjälän eskari ground or syrjälän päiväkotiki area • Time: with 10-20min 									
Materials	I will prepare trash bags, trash grabbers by library, and other necessary items.									
Process	<table border="1"> <thead> <tr> <th>Before Action</th> <th>Action</th> <th>After action</th> </tr> </thead> <tbody> <tr> <td></td> <td>   </td> <td></td> </tr> <tr> <td>Prepare the items</td> <td>Presentation about Phillip's Plogging(5min) → Pickup the trash → Take a Picture</td> <td>Discuss about trash Drawing Read the book</td> </tr> </tbody> </table>	Before Action	Action	After action		   		Prepare the items	Presentation about Phillip's Plogging(5min) → Pickup the trash → Take a Picture	Discuss about trash Drawing Read the book
Before Action	Action	After action								
	   									
Prepare the items	Presentation about Phillip's Plogging(5min) → Pickup the trash → Take a Picture	Discuss about trash Drawing Read the book								



3.3 Sustainable tourism Prototype: Outdoor trash grabber rental service

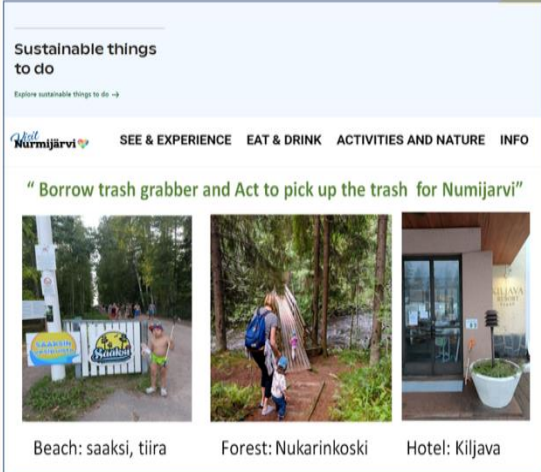



3.4 Sustainable tourism Prototype: Accommodation with rental service

1) Hardware



Level 4. visit Nurmijärvi website

Travel Sustainability	WALKCATION (Walk+Vacation) with trash grabber
 <p>Sustainable things to do Explore sustainable things to do →</p> <p>Nurmijärvi SEE & EXPERIENCE EAT & DRINK ACTIVITIES AND NATURE INFO</p> <p>"Borrow trash grabber and Act to pick up the trash for Nurmijärvi"</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Beach: saaksi, tiira</p> </div> <div style="text-align: center;">  <p>Forest: Nukarinkoski</p> </div> <div style="text-align: center;">  <p>Hotel: Kiljava</p> </div> </div>	 <p>Isosuo luontoreitti (Lepsämäntie 12, 01800 Nurmijärvi) : traking+ Bird watching trash grabber of information signs</p>

2) Software

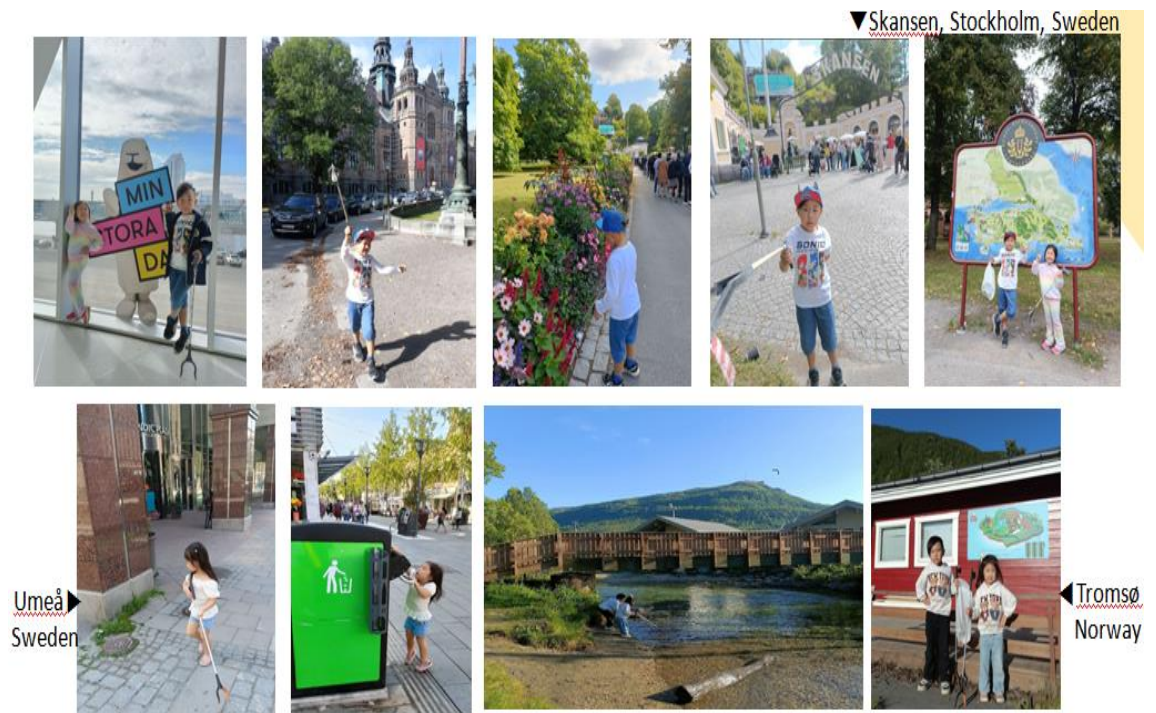
① Domestic





Plogging in Halloween 2024

② Abroad



3.5 Library PR Implementation: PR poster displayed on local bulletins

2024 kevät on tuloss~★♪

Kerää roskia ulkoillessa

① Laina roskapihdit kirjastosta

Kluakkala	Nurmijärvi	Rajamäki
		

② Kerää roskia

		
--	---	--

③ Vie roskat roskakorin

		
---	--	---

Aktivisti: Phillip(6v) ja Lina(4v),Kluakkala
sujilim1018@gmail.com

kevät on tuloss~★♪



Kerää roskia ulkoillessa

★ Laina roskapihdit kirjastosta★

-Käyttämällä roskapihtiä voit säilyttää hygieenisen, turvallisen ja mukavan asennon. Lapsilla on hauskaa käyttää roskapihdit.

① Lähellä kylää: koulu, leikkipaikka, tie

● Road: Walk+ "Pickup the trash"

● School, Sportpark: Play + "Pickup the trash"



Lepsämäntie, Klaukkala



Lahnukseentie, Klaukkala



Syrjälän koulu, Klaukkala



Rajamäen urheilualue, Rajamäki

② Ulkoilu: metsä, uimaranta

● Forest: Berry and mushroom picking+ "Pickup the trash"

● Beach: Swinging+ sand play + "Pickup the trash"



Sääksjärven, Nurmijärvi



Tornimäen kuntoportaat, Klaukkala



Sääksin uimaranta, Nurmijärvi



Aktivisti: Phillip(6v) ja Lina(4v), Klaukkala
sujilim1018@gmail.com



Case of Sello library in Espoo

This case is an example of change from the Espoo Cello Library. The staff member fully supported the research purpose and encouraged the initiative. Most importantly, after the meeting, he took the trash grabbers out of storage placed them in the children's area, and even created and posted a promotional poster(26. March, 2024). Afterwards, I visited the library twice, and each time(summer-fall, 2024), the trash grabbers were all rented out. This outcome demonstrates the significance of having the service in a visible location and well-expressed promotion.

■ Case of Sello library, Espoo by Paulamäki Juha (library staff)

	Before	After
Location	Inside the cabinet (Wasn't seen)	Target: family Changed the location of the trash tong to the children's library
Poster	Wasn't seen	Basket + poster attachment (Nurmervi Benchmarking)Easier to understand with pictures





3.6 School Plogging Implementation

School Plogging	
Environmental education	
Plogging action	
Plogging Talk and Discussion	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Roskapihdit matka kerää roskia</p> <p>-Phillip Cho-</p> </div> <div style="width: 65%;"> <p style="text-align: center;">Talk on Plogging journey</p> <p style="text-align: right;">Feedback section</p> </div> </div>



3.7 Small Steps Can Lead to Big Results

[this is FINLAND](#)
Share your best and brightest ideas

[LIFE & SOCIETY](#) [BUSINESS & INNOVATION](#) [ARTS & CULTURE](#) [MEMBERSHIP](#) [FACTS, FIGURES & INFO](#)

SUSTAINABILITY

FOR MANY IN FINLAND, SUSTAINABILITY IS THE OBVIOUS CHOICE

They feel good, they get their recycling sorted, and they know they have to do it.

Circular economy success:
Finland's recycling programme keeps bottles and cans off the streets.

We see how Finland's deposit system for bottles and cans achieves a recycling rate of more than 90 percent, and how city administrators and event organisers supplement the system with their own successful programmes.

Tagged in: [Environment](#), [Sustainability](#), [Waste Disposal](#)

FINNISH INNOVATIONS FOR OVERCOMING PLASTIC WASTE

Overcoming plastic waste is a challenge that is being met in new and innovative ways in Finland.

Living everyday life sustainably in Finland

Knowledge shared is knowledge doubled. We see how one woman's idea became a community information centre.

Tagged in: [Climate](#), [Environment](#), [Innovation](#), [Recycling](#), [Sustainability](#), [This is FINLAND Magazine](#)



[LIFE & SOCIETY](#) [SUSTAINABILITY](#)

Trash Grabber rental service led to climate action from children to senior and tourist

Near you

- Borrow the trash grabber from the library
- Borrow the trash grabber from the beach, park
- Borrow the trash grabber from the Hotel, Camping site

Appendix 4. Survey on Trash Grabber Rental Service for Library Staff

1. Online survey questionnaire

Interview on Trash Grabber Rental Service for Nurmijärvi Library Staff

Olemme iloisia voidessamme jakaa tulokset kyselystä, joka toteutettiin maaliskuusta syyskuuhun 2024 ja joka keskittyi Roskapihdeistävuokrauspalveluun. Kyselyyn osallistui 150 henkilöä—100 Klaukkalasta ja 50 Nurmijärveltä—ja se tuotti seuraavat keskeiset havainnot:

Vähäinen tietoisuus vuokrauspalvelusta

- 75 % vastaajista (113) ei ollut tietoisia palvelusta, kun taas vain 25 % (37) tunsi sen.
- Palvelun tunteneista 65 % sai tietoa kirjastosta, 24 % mediasta ja 11 % ystävien kautta.

Kokemukset palvelusta

- 37 palvelusta tietoisesta henkilöstä vain yksi oli vuokrannut roskapihdit.
- 20 % vastaajista oli välinpitämättömiä, kun taas 80 % kertoi tarvitsevansa lisää motivaatiota käyttää palvelua.

Edellä mainitut tulokset toimivat pohjana tämän haastattelun kysymyksille. Teidän arvokkaat näkemyksenne kirjaston henkilökuntana ovat olennaisia, jotta voimme ymmärtää palvelun haasteet, onnistumiset ja mahdolliset kehitysalueet. Tämä palaute auttaa myös tunnistamaan mahdollisuuksia tulevaisuuden kehittämiseksi ja yhteisön osallistamisen aloitteille.

Kiitämme jo etukäteen ajastanne ja harkituista vastauksistanne!

(In English)

We are pleased to share the results of a survey conducted between March and September 2024, focusing on the Trash Grabber Rental Service. This survey involved 150 participants—100 from Klaukkala and 50 from Nurmijärvi—and provided the following key insights:

Low Awareness of the Rental Service

- 75% of respondents (113) were unaware of the service, while only 25% (37) were familiar with it.
- Among those familiar with the service, 65% learned about it through the library, while 24% heard through media and 11% through friends.

Experience with the Service

- Out of the 37 people aware of the service, only one person had rented a trash grabber.
- 20% of respondents expressed indifference, while 80% stated they needed more motivation to use the service.

The above results form the basis for the questions in this interview. Your valuable insights as library staff are crucial for understanding the challenges, successes, and potential areas of improvement for this service. This feedback will also help identify opportunities for future development and community engagement initiatives.

Thank you in advance for your time and thoughtful responses!

1. Tietoisuus ja kokemus: Kyselyn tulosten perusteella kolme neljästä kirjaston kävijästä ei ollut tietoinen roskapihdien vuokrauspalvelusta. Mitkä ovat mielestänne syitä tähän vähäiseen tietoisuuteen?(Awareness and Experience: Based on the survey results, 3 out of 4 library visitors were unaware of the trash grabber rental service. In your opinion, what are the reasons for this low awareness?) *

Your answer

2-1. Palvelun toiminta: Mitä positiivista tai negatiivista palautetta olette saaneet roskapihdien vuokrauspalvelusta? (Service Operations: What positive or negative feedback have you received regarding the trash grabber rental service?) *

Your answer

2-2. Palvelun toiminta: Mitä haasteita kohtaatte henkilökunnan jäsenenä tämän palvelun toteuttamisessa? (esim. vuokravälineiden siirtäminen) Service Operations: What challenges do you face as a staff member in operating this service? (e.g., relocating rental equipment) *

Your answer

2-3. Auttaisivatko kirjaston sisäiset TV-mainokset edistämään palvelua? (Would in-library TV advertisements help promote the service?) *

- Yes
- No
- I do not know

3. PR-julisteet: Heinäkuusta lähtien kirjastossa on ollut esillä A4-kokoisia PR-julisteita roskapihdien vuokrauspalvelusta osana opinnäytetyöni kokeellista tutkimusta. Mitä positiivista tai negatiivista palautetta olette saaneet tästä aloitteesta? (PR Posters: Since July, A4-sized PR posters for the trash grabber rental service have been displayed in the library as part of an experimental study for my thesis. What positive or negative feedback have you received regarding this initiative?) *

Your answer

4-1. Tapahtumat ja aktiviteetit: Onko teillä suunnitelmia järjestää ympäristöaiheisia tapahtumia vuonna 2025? (Events and Activities: Do you have plans to host any environment-related events in 2025?) *

- Yes
- No
- I do not know

4-2. Tapahtumat ja aktiviteetit: Uskotteko, että tapahtumat, kuten Earth Day tai Environment Day, sopivat hyvin yhteen roskapihdién vuokrauspalvelun kanssa? (Events and Activities: Do you think events such as Earth Day or Environment Day pair well with the trash grabber rental service?) *

- Yes
- No
- I do not know

5-1: Kehitysehdotukset: Jakaisitteko ideoitanne siitä, kuinka roskapihdién vuokrauspalvelusta voisi tehdä aktiivisemmän ja houkuttelevamman? (Suggestions for Improvement: Please share any ideas for making the trash grabber rental service more active and engaging.) *

Your answer

5-2: Kehitysehdotukset: Millaisia konkreettisia tukitoimia toivoisitte kunnalta tämän palvelun kehittämiseksi? (What specific support would you like to receive from the municipality to enhance this service?) *

Your answer

Submit

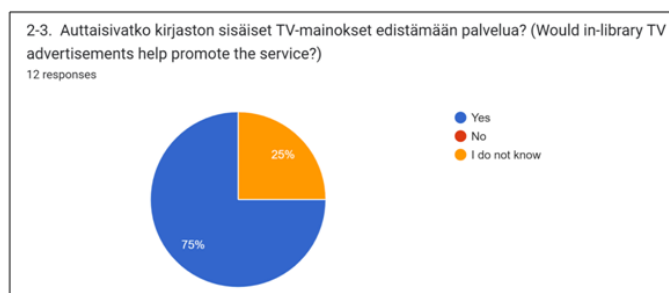
Clear form

2. survey answers

Q1. Visitor Awareness and Experience about trash grabber service

Library side	Too little marketing. Lack of marketing, lack of advertisement. More advertisements, Advertisement is needed more actively. Lack of marketing
Visitor side	Customers stick to familiar services and have little interest in new ones unless they need

[MKT] Possible to TV advertising in Library



Q2-1. Feedback about trash grabber service user

Positive	<p>Positive feedback: Families want to teach their children about cleanliness and show them the impact on nature if trash isn't collected.</p> <p>It holds symbolic value for improving the environment.</p> <p>Everyone was satisfied when returning the rental service.</p> <p>Children showed curiosity, and parents rented it for them.</p> <p>Received some thankful feedback.</p>
Negative	None

Q2-2. Challenge point about trash grabber service

Yes	A strict return system: Return to the same library. No extension deadline by online The risk of breakage.
NO	Baskets often need to be moved, but generally, there are no issues with service operation.

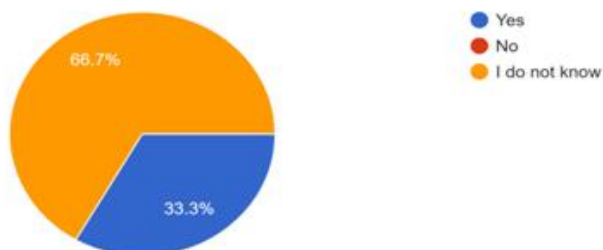
Q3. PR Poster, Summer 2024

Good	<ul style="list-style-type: none"> • more curious and interest: Based on the poster, I have a few questions, need more active advertisement. It's working • Many customers have learned to use the trash grabber • The picture poster is better than the library's. • The poster needs to be displayed in more places in the library
Improvement	The size was small . It's a bit small. A bigger one might be better.

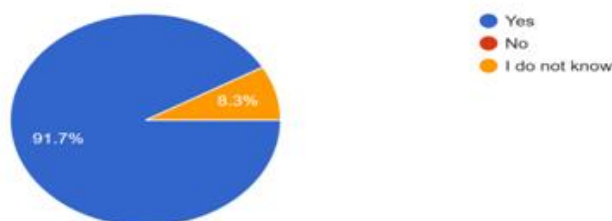


Q4. Events and Activities

4-1. Tapahtumat ja aktiviteetit: Onko teillä suunnitelmia järjestää ympäristöaiheisia tapahtumia vuonna 2025? (Events and Activities: Do you have p... to host any environment-related events in 2025?)
12 responses



4-2. Tapahtumat ja aktiviteetit: Uskotteko, että tapahtumat, kuten Earth Day tai Environment Day, sopivat hyvin yhteen roskapihdién vuokrauspalvelun k... pair well with the trash grabber rental service?)
12 responses



Q5. Suggestions for Improvement_Library side

MKT	More marketing on various channels (Online & Offline) Advertise the trash grabber service with relevant library events
SPRING	Advertise more in spring when the snow melts. Post more ads during the holiday season.
Storage method	Need to find better visual stand/box ideas : When all are checked out and the basket is empty, it looks like a trash box, Umbrella stand The service should be presented as a meaningful action for the environment.

Q5-2. Suggestions for Improvement_ Municipality

MKT	Local governments can advertise more through their own channels.
Campaign	More trash campaigns should be mandatory in schools
Service	Quick replacement of trash can when damaged It would be nice to have kid-friendly tools (they seem too big for kids)

Appendix 5. Service design process: Deliver

The library's trash grabber rental service could play a significant role as a "starting point for climate action" for citizens and residents. Research indicates that it could be operated with three service concepts depending on the location and target audience. For Level 1, to attract new customers, it is essential to promote and activate the rental service through marketing efforts within the library. For Level 2, to enhance the convenience for regular plogging customers and to stimulate curiosity and increase participation opportunities for new outdoor activity enthusiasts, outdoor rental services should be operated in locations such as sports fields, parks, and beaches. For Level 3 and 4, in addition to residents, the use of litter-picking tools can be proposed as a sustainable travel activity for domestic and international tourists, offered at accommodations or outdoor venues.

	Trash grabber project			
	Level 1	Level 2	Level 3	Level 4
Place	Library	Part, Beach	Accommodation	Visit Nurmijarvi website
Service Concept	Let's Plogging short time for me, family, society, earth	Anywhere, Laina Roskaphiti and Plogging		Let's try easy sustainable travel
Final Goal	Small climate acting toward Sustainability			
Goal	Promote • Encourage • boost trash grabber rental service		Support trash grabber rental service	
	"City sustainably" how to make sustainably in city?		"Travel sustainably" how to travel sustainably in Finland?	
Target	New comer in Library residents, citizen		(Regular) residents, citizen visitor, tourist	

This study re-examined the litter-picking tool rental service, traditionally provided for residents' convenience, from a new perspective as a tool for citizens to engage in climate and environmental action. Consequently, the service expanded its scope beyond libraries to include outdoor settings and travel content, generating innovative ideas and rediscovering its potential. Notably, the study introduces a Finnish case that successfully created an accessible environment for citizens to participate in public services at low cost. This serves as a benchmark for climate action initiatives that can be readily implemented in other countries.