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Management from the Nova School of Business and Economics.

**GROWING TOGETHER: COMMUNITY GARDENS IN UNIVERSITY CONTEXTS AND
THEIR ROLE IN FOSTERING SOCIAL COHESION IN DIVERSE COMMUNITIES**

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Abstract:

Rethinking urban spaces and exploring the potential of community gardens in urban settings has become increasingly important as cities adapt to the changing needs of their communities. This research aimed to test the general interest in establishing a community garden on the Nova SBE campus and to investigate the willingness of the community to participate actively. This paper shows that various stakeholders are interested in establishing the community garden, leading to the development of a long-term management model.

Keywords: Urban gardens, Community gardens, Social cohesion, Physical health, Mental health, Social inclusion, Community development

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1. Introduction

In recent years, the projection that two-thirds of the world's population residing in urban areas by 2050 (United Nations 2023) has led to renewed interest in developing sustainable and inclusive cities and reimagining urban spaces. Urban gardens, which can differ in their use, have emerged as a promising topic of interest, as they offer a potential solution to several pressing issues facing urban communities (Glatron and Granchamp 2018).

This project-based research focused on community gardens, which can be broadly defined as a place: *“That can be urban, suburban, or rural. It can grow flowers, vegetables, or community. It can be one community plot or can be many individual plots. It can be at a school, hospital, or in a neighborhood”* (“American Community Garden Association I Resources” 2021). With the common goal of establishing a community garden on Nova SBE campus, the project started with the DESIS Lab at Nova SBE¹ with the support provided by the Chief Sustainability Officer at Nova SBE. Despite examples of community gardens in universities, there are only a few in business schools. With this project, I wanted to explore *how can we create a university community garden by engaging all beneficiaries and stakeholders, within and outside of the university?*

I used a design thinking approach – which is, by definition, human-centered and collaborative. To foster the participation and engagement of community members, the approach involved qualitative methods used in design research, including expert interviews, observations, participatory research, and fast prototyping workshops. The project-based nature of this thesis allowed me to be actively involved in transforming my findings into practical solutions that can have a tangible impact on the community. With the primary goal of exploring the potential of community gardens at the business school, I aimed to promote social interaction

¹ DESIS lab is the programming and community engagement arm of the ERA-Chair in social innovation at Nova SBE.

and improve community members' physical and mental health. The remainder of the paper is structured as follows: Section 2 reviews the existing literature on community gardens; Section 3 depicts the methodology; Section 4 reports the research findings; and Section 5 discusses and concludes the findings and provides future recommendations.

2. Literature Review

This section explores the historical development of community gardens, their different types, benefits and challenges, and potential governance structures, focusing on university-based initiatives. The secondary research aims to provide a comprehensive overview that lays the foundation for an in-depth exploration of the complexities and dynamics of community gardens in a university setting.

2.1 History of community gardens

The historical development of shared public spaces in Europe and North America illustrated the rich history of urban gardens that often emerged in times of crisis and periods of instability. They had an important role, as they provided access to fresh food and medicine and served as an answer to unemployment (Bell, et al. 2016). Taking a closer look at European countries, the first community garden in Sheffield, England, was created in the 1730s (Landscape Designers Sydney 2023). Initially, the British government leased the land to artisans and tenants of the estates as a response to the demand for space to grow food, which allowed poor communities to cultivate their vegetables (Blakemore 2020). In addition, in the 19th century, public gardens gained importance, and vegetables and flowers were planted (Landscape Designers Sydney 2023). In response to the economic recession, the first community gardens were created in the US in the 1890s, with Detroit among the first American cities to make vacant plots available. The municipality sponsored the urban gardening program and successfully ran programs like "Pingree's Potato Patches" that aimed to provide unemployed workers and immigrants with the

land and the opportunity to learn gardening knowledge and tools to cultivate gardens. Other cities were inspired and implemented vacant lot gardening programs in their towns (Smithsonian Institution 2023). During World War II, food production from Victory Gardens in the U.S. covered up to 40% of the country's food supply, showing the potential of gardens to address food shortages in times of crisis (Gottlieb 2022). Other institutions such as schools, prisons, and domestic violence shelters also discovered the benefits, such as therapeutic effects, stress reduction, and community fostering.

Overall, urban gardens provided a sense of stability in times of crisis and allowed participants to experience joy again (Gottlieb 2022). Especially after the COVID-19 pandemic, there is an increasing interest in creating public shared spaces. The community perceived those spaces as opportunities for outdoor social interaction and gardening activities (Howes, Pickering and Raneng 2023).

2.2 Types of Gardens

While urban farms primarily focus on growing vegetables to ensure food security (Rich 2014), community gardens can be distinguished by their broader definition. Community garden is an umbrella term that includes multiple types of spaces. There are different types of community gardens, such as recreational gardens, privately owned or entrepreneurial parks, and school gardens (Ball, et al. 2018). They are also increasingly implemented in universities, as I will discuss below. Recreational gardens provide a social and environmental space for their visitors, while privately owned gardens have the intention to prevent social exclusion and poverty in largely urbanized areas. School gardens, typically located on educational campuses, are owned and managed by schools or educational institutions. These gardens contribute to academic achievements by promoting the development of social and leadership skills development and enhancing students' well-being through physical activities such as gardening (Ball, et al. 2018).

All types of community gardens share a common objective: being a place where people come together; they are based on community needs such as improved food security, better nutrition, increased physical activity, strengthened socio-economic relationships, and enhanced psychological well-being (Ball, et al. 2018). Community gardens do not only aim to grow food but also to engage the community in collective social action and provide activities to connect communities (Nettle 2016). This project focuses on university-based community gardens, which play an essential role in university sustainability strategies. They contribute to the Sustainable Development Goals (SDGs), serving as a strategic approach for sustainable environmental and urban development within the global environmental sustainability agenda. By implementing community gardens and reconnecting students to natural areas on campus, the community gardens can increase sustainability knowledge and promote pro-environmental behavior in the community (Byrne, et al. 2020).

2.3 Benefits of University Community Gardens

Campus community gardens can improve student health, address social and environmental issues, foster a sense of stewardship of the natural environment, and encourage collaboration between the university and the local community (Byrne, et al. 2020). The benefits of these gardens include education, sustainability, and community engagement while promoting psychological well-being, social relationships, environmental stewardship, academic success, and providing participants with a sense of home and ownership (McGuire, Morris und Pollard 2022). As students experience increased academic stress, contact with nature can contribute to psychological recovery and reduce the risk of social isolation by facilitating social communication. Research shows that gardening programs in higher education institutions improve the satisfaction of students and the perception of quality of life in the long term (Byrne, et al. 2020).

A powerful example is the experience of Arabel Meyer, a Cal Poly² university student who benefited from the student-run campus community garden. Arabel's journey reflects the challenges faced by many students who began their university careers and were confronted with a new learning environment, social challenges, and the overwhelming feeling of loneliness and isolation associated with moving to another city. In her blog, she highlighted the therapeutic effects of her time spent in the campus community garden, and the desire of many students who share this need for the healing effects of nature (Meyer 2022). Another example of how community gardens can positively impact students is seen in the three gardens at Waterloo Public Housing Estate in Australia³. These three community gardens are common open spaces at the streetside of the living towers and include basic landscaping such as shade trees, seating, play areas, picnic tables, and barbecues. Additionally, during a collaborative project between the Waterloo Public Housing Estate and the University of New South Wales, undergraduate students engaged in individual projects within the gardens to ensure an ongoing initiative, integrating learning experiences alongside research activities (Corkery 2004). This is an example of how community gardens can combine health education (knowledge) with learning skills to help individuals develop lifelong health habits and skills (Ball, et al. 2018). All cases demonstrated that greenspaces can positively impact stress levels and engage students. Consequently, researchers recommend that universities should support creating and maintaining natural spaces on campus for active leisure, solitude, relaxation, and recreation. (Ball, et al. 2018).

2.4 Barriers to University Community Gardens

As university community gardens often operate in complex socio-political and environmental contexts, exploring potential barriers and enablers to their success is essential (Lawson 2005).

² Public University in San Luis Obispo, California

³ Located 2.5km south of Sydney's central business district, the Waterloo Public Housing Estate aims to improve the neighborhood and address social issues of their residents.

Creating and maintaining a campus community garden requires effort, planning, coordination, and time from all involved. Many gardens fail due to conflicting stakeholders' interests, such as differences between students and the wider community. The main reasons for failure are unstructured communication models, poor organization of activities, inadequate design implementation that fails to engage people, lack of commitment from university management, and over-reliance on volunteers (Byrne, et al. 2020).

Students actively engaged in community garden activities in the Waterloo Public Housing Estate confirm the challenges of initiating a community garden. They highlighted the need to acquire gardening skills, build connections, and communicate effectively with individuals from diverse backgrounds and cultures (Corkery 2004). Furthermore, it becomes clear that student turnover impacts the success of a community garden. There is a critical need to provide guidance and funding to encourage students to get involved in the campus community garden (Corkery 2004).

Booth, et al. (2017) identified similar challenges in their study of 115 participants from a disadvantaged US neighborhood involved in community gardening programs. One key learning was that regular participation of community members was essential for positive outcomes. Results showed that factors such as stimulating garden spaces, diverse produce, adequate staff, and a mix of participants with different languages, cultures, and educational backgrounds positively influenced participation (Booth, et al. 2017).

2.5 Practices for effectively managing community gardens

Community-based initiatives face the challenge of understanding the community's needs and expectations. The strengths and needs of the community can be explored through building a meaningful and trustful connection through personal conversations to learn more about the community's identity, history, circumstances, customs, and interpersonal ties, skills, talents, and abilities of individuals (Gough et al. 2020). By recognizing and working with existing

community leaders and community organizations, it is possible to identify where efforts have already been made and where they can be built upon. It is also an opportunity to gain an insight into the community's needs or aspirations and to assess the feasibility of developing relationships around these goals (Gough et al. 2020).

The creation and use of public gardens attract a wide range of stakeholders, including not-for-profit organizations, municipalities, schools, and community organizations, as gardens offer unique resources and skills and improve the quality of life in urban areas. Collaboration and building on the strengths of different stakeholders through the sharing of knowledge and resources, making it possible to address complex challenges and solve a societal problem that would not be able to be addressed by a single stakeholder, are crucial to the long-term success of community gardening (Gough et al. 2020).

Collaborating across sectors can be challenging, as partnerships aim to expand community choices while staying true to the garden's mission. However, the potential for more substantial outcomes arises when sectors work collectively. Innovation can be fostered, and impactful results can be produced by sharing resources, ideas, and decision-making power. Working across sectors often means learning from mistakes, repeating steps, and responding to changing circumstances (Gough et al. 2020).

2.6 Governance Models for Community Gardens

Sophisticated governance structures of community gardens are crucial to their success and serve as a framework to determine areas such as interaction and communication between stakeholders, patterns of rules, accountability, responsibility, transparency, and democracy (Bevir 2008). There is still much research to be done to understand how community gardens can be managed effectively, as the differences in framework conditions can significantly influence the determination of the governance model (Fox-Kämper et al. 2018).

There is a wide range of approaches to managing community gardens, and the choice of management model significantly impacts the level of community involvement and external support. The two main governance models for managing community gardens are top-down and bottom-up (Ponstingel 2022). The top-down model is mainly used in cases where an external organization has initiated the establishment of a community garden and takes limited account of community input. The bottom-up governance model is a community-led model where community members start, launch, and manage the entire project without external support. From inception to management, the community has complete control over the project. In response to each context's dynamic and varied needs, various hybrid models were developed to provide a flexible framework for community gardens (Jacob and Rocha 2021).

A successful application of combining top-up and bottom-up models can be seen in several community gardens in Toronto, supported by the city's Community Gardens Program and not-for-profit organizations. By mixing models, all stakeholders can benefit. This ensures adaptation to community needs, promotion of social capital, and consensual decision-making through bottom-up approaches. At the same time, problems such as coordination and power imbalances among garden users due to less regulated control can be avoided using top-down approaches (Jacob and Rocha 2021).

3. Methodology

Aiming to create knowledge and social change, I used a qualitative methodology, incorporating a design thinking approach that can be defined as *“a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success”* (Brown 2019). Today's challenges cannot be solved by a single sector alone; only the efforts of different stakeholders lead to efficient and innovative solutions. Innovative and sustainable solutions need a design approach emphasizing collaboration, participation, and co-creation (Manzini 2015). Therefore, I used

participatory and collaborative design approaches, involving all stakeholders in the design process to create solutions tailored to the needs and preferences of the community garden's users. The qualitative design research methods used for this project included expert interviews combined with creative design research tools and the organization and implementation of rapid prototyping workshops. [Figure 1](#) displays all steps of the design thinking process.

3.1 The Context

Nova SBE aims to establish a culture of impact, embracing sustainability while contributing towards the SDGs and creating meaningful, inclusive, tangible, and sustainable solutions (Nova SBE 2023). Situated in Carcavelos, Nova SBE's modern and innovative campus offers its community a place to study, collaborate and grow. Yet, green spaces are not fully integrated in the campus' life. For the last two years, there have been discussions among some students and the team in charge of sustainability about establishing a community garden on the Nova SBE campus. Yet, due to the long-term commitment and the need for a management structure, no full concept was developed.

At the start of this research, the location of the community garden had already been considered. It will be located directly at the campus of Nova SBE, next to Navigator Park. It borders the neighborhood and is accessible to passing individuals (see [Figure 2](#)). Currently, the land is under the responsibility of the Municipality of Cascais, which allows Nova SBE to use the space. However, there is some ambiguity as it is located on the edge of the campus, bordering the neighborhood. In this distinctive location, creating a community garden is both a green and social initiative to foster connections between the Nova SBE community and the neighboring residents. Community engagement is a key aspect of the project, requiring active involvement and collaboration with various stakeholders. [Figure 3](#) presents an overview of all stakeholders involved. The primary stakeholders on the Nova SBE side include DESIS lab, student clubs and institutes, as well as students, faculty, and staff. On the Cascais side, key

stakeholders comprise the Municipality of Cascais, residents, local NGOs, schools, and local companies. Through direct interaction, I actively engaged with all stakeholders, sought direct contact, to explore their needs, preferences, and expectations.

3.2 Secondary research

I used secondary research to gain a broad understanding of existing data, literature, studies, and information on the implementation of community gardens. Those findings served as a basis for my project to identify gaps in the existing knowledge.

3.3 Expert interviews

I conducted 14 expert interviews with professionals from different sectors, such as municipal representatives, participants in garden initiatives, university-based experts and social innovators. The variety of experts provided a cross-validation of the findings and thus increased the reliability of the research. It also allowed me to thoroughly understand the topic with contrasting viewpoints and different approaches. Geographically, the interviews covered Portugal, particularly in the Lisbon area; Copenhagen, Denmark; and New York, USA. The semi-structured interviews covered key aspects such as exploring the expert's background and history of involvement, understanding their objectives and governance structure, examining their approach to community engagement, and gathering insights into challenges and advice. The overview of all expert interviews is displayed in [Table 1](#). All interviews were recorded, except just two, to ensure the flow of the conversation. On average, the interviews ranged between 30 and 60 minutes.

3.4 Field visits

To gain a more in-depth understanding of the functioning of the garden initiatives, I went on field visits. In total, I visited three gardens in Portugal and Denmark, two on university campuses and the third in a public space. This allowed me to experience the local context in which the community gardens exist. My data collection was supported by direct interaction

with garden stakeholders, observing gardening practices, maintenance routines and community engagement strategies in action. During my visit of Mosteira de Santa Maria do Mar, a local community garden in Carcavelos, I did some observations and interviewed the community garden coordinator, Ines Valente⁴. The visit enhanced the understanding of the participants' location, size, demographic, needs, and expectations. I also visited Horta FCUL, the community garden at the University of Lisbon, a successful university-based garden. Horta FCUL focuses on raising awareness and spreading the practice of permaculture as a solution to many of the ecological, social, and economic problems that the world is facing (Horta FCUL 2021). Additionally, I visited the community garden of Copenhagen Business School in Denmark. The permaculture-based garden allows students to exchange ideas on topics such as sustainability, biodiversity, and knowledge transfer (Blasco, Dioba und Fróes 2023). Comparing these different projects, their goals and organizing structures, lessons can be learned from the challenges and how to overcome them. Aside from field visits, I attended the Jardins Abertos Garden Festival⁵ as a volunteer to observe community engagement and experience their workshop offers.

3.5 Design research

To ensure that the design solutions were user-centered, I designed several materials to engage community members: posters, flyers, and interactive surveys. This allowed them to share their ideas, expectations, and needs and to vote on activities. Supported by the budget of the Prototyping Fund⁶, I developed a fast-prototyping workshop series to test the result of the participatory research. The workshops served as a strategic way to measure interest in the activities and actively engaged students, faculty, staff, and the local community and aimed to foster a sense of community spirit while gathering feedback for future events. Participants

⁴ Project manager at Terras Cascais and garden coordinator at Mosteira Santa Maria do Mar, Carcavelos

⁵ Jardins Abertos is a garden festival that serves as a strategic response to the desire to promote strong, positive connections with nature, bringing sustainability into the urban context.

⁶ Collaboration of the DESIS Lab with Nova SBE Haddad Entrepreneurship Institute

experienced their potential benefits by actively participating in hands-on activities. The positive workshop experience might encouraged favorable word-of-mouth, spreading the concept of community gardening at Nova SBE and attracting a broader audience. The first workshop, on the theme of art in nature, allowed participants to discover their artistic talent while creating nature-inspired crafts. After gathering feedback, I ran a second workshop on how-to homegrown oyster mushrooms. To gain knowledge, I first attended a similar workshop at the NAM mushroom farm, and there met an expert whom I invited to co-lead my workshop at Nova SBE. The iterative process of having several workshops created an effective and valuable learning experience, showing community members that their input is valued and implemented in future activities. My observations during the workshops and the surveys' results allowed me to test the initial assumptions underlying the workshops' creation.

4. Findings

The results section reviews the research findings from various sources, including secondary data, observations, participatory research, expert interviews, and workshops. These various sources provide valuable insights into a comprehensive understanding of the community's needs, interests, and expectations. This section is divided into sub-sections, in which I examined each data source and elaborated subsequent key findings. The findings were used to develop recommendations for future planning, designing, and implementing a community garden at Nova SBE.

4.1 Gaining Inspiration from Other Projects

While exploring various community gardens, I discovered that each community-based initiative has different structures and objectives. Many informants, such as Marco Espinheira⁷, advised me to clearly define the garden's purpose to attract passionate people to the initiative.

⁷ Fundraising specialist at Nova SBE

Residential gardens such as Terras Cascais in Carcavelos are an example of urban community gardens that focus on vegetable production and serve as spaces for social interaction between residents. Ines Valente explained how Cascais' municipality, recognizing the positive impact on community gardens on the community, actively supported the growing demand for community gardens. Similarly, Antonio Alexandre⁸ highlighted how universities such as the University of Lisbon had understood the broader benefits of community gardens and actively implemented gardens in the university context. Horta FCUL at University of Lisbon focuses mainly on vegetable production and strongly emphasizes promoting community involvement. But not all community gardens aim to grow vegetables; instead, they aim to be a space for community socialization. Another Portuguese interviewee, André Rocha⁹, confirmed this view and described a garden project in Peniche, Portugal, where the community garden is designed to function as a communal meeting, rather than focusing on individual plots.

Given the specific context of Nova SBE as a business school, the insights from Copenhagen Business School and its Permagarden were particularly relevant. According to Maribel Blasco¹⁰ the Permagarden at CBS strategically addresses mental health issues within the university community, emphasizing well-being through therapeutic soil work. She stated that the prevailing competitive mentality within the business school environment has led to a concerning rise of stressed students at CBS. In fact, Maribel underlined the profound impact that volunteering and participating in the creation and maintenance of the Permagarden at CBS has had on her own well-being: *"It's just like I haven't received this much energy from anything I've done at CBS in my entire over 20-year career here"*. Furthermore, she talked about the lengthy process of implementing the garden, highlighting that CBS played a crucial role by

⁸ Biologist, educator, permaculture and urban forestry consultant and founder of Horta FCUL at the University of Lisbon

⁹ Assistant Professor at the Polytechnic of Santarém, specializing in Design and Technology. Additionally, he holds the role of co-founder and scientific coordinator at Fablab Benfica

¹⁰ Associate Professor at Copenhagen Business School, coordinator of Permagarden at CBS

providing the land and kick-off funding for the project. The institution cleared the land and installed a pathway between some raised beds within a confined space. Even though the Municipality of Copenhagen funded the project with 100000 krona (equivalent to 13.416.05€), the support from CBS was limited and lacked sustained long-term backup for the project. Antonio reported similar experiences, stating that the first few years were difficult in terms of support from the university. Moreover, he explained that over the past ten years, there has been a significant change in universities' mindset towards sustainability initiatives; now, there is growing recognition from the university, which can be seen through more significant support, reflecting a positive change over time.

4.2 Results of Effective Partnerships

The secondary research highlighted the importance of building effective partnerships to share knowledge and resources. Horta FCUL, despite having no direct funding, was able to secure resources through collaboration and partnerships. The founders of Horta FCUL created a Miyawaki¹¹ forest at Lisbon University (FCUL). With the aim to enhance biodiversity, 690 plants and 60 to 70 different species in a 200 square meter area were cultivated. The successful implementation of the mini forest at the FCUL was made possible by key partnerships with organizations such as 1planet4all and the non-profit organization VIDA (Da Cunha 2023). In addition to these key partnerships, the volunteer efforts of 100-120 students played a crucial role in making the mini forest project a reality (Alexandre, Avelar and Mendes 2022). During an expert interview with Victor Vieira¹², I explored the dynamics of effective partnerships with the municipality and how such collaborations can move a project forward. Victor presented the successful example of Up Farming, an NGO supported by the Municipality of Lisbon, which combines vertical farming productivity with therapeutic community gardens. This innovative

¹¹ Growing Miyawaki forests is a way of afforestation, focusing on providing a wide range of biodiversity.

¹² Works at the Energy and Environmental Agency of Lisbon and is an Expert in Municipality Collaborations

partnership fosters urban well-being and community development, creating shared spaces for activities and discussions. There is a consensus among the experts I interviewed that in the specific context of Nova SBE, partnerships with student clubs can be a valuable approach to engaging the community. Sameera Chukkapalli Homes¹³ emphasized that involving student clubs might ensure the longevity of the community garden at Nova SBE, suggesting that the community garden at Nova SBE could become a pillar of their program.

4.3 Volunteering Work

Volunteering is an important element of community garden's mode of organizing. However, as noted by several of my informants, it can also be challenging. For instance, Maribel highlighted challenges regarding students' business-oriented mindset and tendency to make cost-benefit analyses of their time. Therefore, she emphasized the importance of volunteers' energy and the need for committed individuals. Despite lacking monetary compensation, Maribel Blasco acknowledged the need to offer something in return. She recognized the opportunity to contribute by transferring knowledge and motivation. Similarly, Antonio Alexandre noted that the success of a community garden relies on the active participation of a passionate community. Drawing parallels with Maribel's statements, it becomes evident that creating a community garden in an academic context heavily relies on volunteering due to limited financial resources and university support. Both emphasized that volunteering not only provides a sense of freedom but also a challenge in terms of meeting institutional requirements.

To ensure effective volunteer engagement, it is crucial to focus on organizing activities effectively, preventing poor communication and promoting reliability among volunteers. Volunteer engagement experts, such as Telma Antunes¹⁴ and Tomás Tojo¹⁵, noticed that despite initial enthusiasm among volunteers, dropouts often occur due to a lack of sustained

¹³ Obama leader and expert in human-centered design solutions in diverse communities

¹⁴ Volunteer coordinator at Jardins Abertos Festival

¹⁵ Garden designer and festival director of Jardins Abertos Festival

commitment. For instance, Telma underscored the significance of maintaining ongoing communication with volunteers to minimize frustration and prevent dropouts in festival coordination. To ensure effective communication, online meetings were organized to establish familiarity with each volunteer before face-to-face meetings. In addition, Telma Antunes emphasized the importance of pre-events, which facilitated sharing experiences and engagement within the volunteer community, to provide an opportunity for volunteers who have previously networked to reconnect: *“Some people really got, like, friends, so they are also hanging out outside of the festival”*.

To test how communities can be organized and involved in community engagement, I volunteered twice during the Jardins Abertos Garden Festival (see [Figure 4](#)). I connected with volunteers and had conversations about their motivations for being involved in volunteering. Based on my observations, the main contributors were women who shared a passion for gardening. This aligns with the statements of Tomás Tojo, who highlighted a common bond between the different people involved - a love of gardens and botany. During the volunteering work, I perceived a strong sense of community that was fostered by open and friendly participants. Many of them had volunteered at Jardins Abertos for years and were motivated by a desire to contribute to the community and deepen their understanding of Lisbon's gardens.

4.4 Governance Structure

Secondary research highlighted the importance of effective stakeholder management and the need for a governance model, especially when multiple stakeholders are involved in the project. The expert interviews revealed that many garden initiatives lack a clear governance model, leading to ongoing challenges. Several experts agreed that a structured governance model is crucial for the long-term success of a garden initiative. For instance, Maribel Blasco reported that Permagarden at CBS doesn't have a clear governance model, as they are still anchored in Campus Services, which she described as a "disaster". While Campus Services built the

infrastructure, they lacked a budget to fund plants. She suggested developing a long-term plan, as well as clear terms of reference and a commitment to achieving greater financial independence from the institution. Likewise, Maria Canelhas¹⁶ noted that the governance structure is the most challenging aspect of gardening initiatives that's why she advised to define operating models from the very start rather than communicating at a later stage.

Particularly in a university context, where numerous stakeholders are involved, there is a need for effective stakeholder management and a well-defined governance model in ensuring the sustainable success of community gardens. An example of the successful involvement of the community members in the governance approach can be seen at the University of Lisbon at Horta FCUL. Expert Antonio Alexandre has years of experience and organizes the community with the sociocracy approach¹⁷. Horta FCUL has a few leading guardians, each responsible for a specific element. Those guardians are not responsible for carrying out tasks but for ensuring that they are carried out. Antonio Alexandre emphasized the importance of ongoing communication and regular meetings for the guardians to guarantee the success of the governance structure.

4.5 Understanding the Needs and Expectations

Findings from secondary research highlighted the importance of understanding the community for successfully managing community gardens. Various experts suggested observing and understanding the dynamics of community ownership by having direct engagement and conversations with community members. For instance, expert Anahid Roux-Rousier¹⁸ raised a crucial question about the integration of Portuguese speaking residents with international students who don't speak Portuguese. Other experts in the field of community engagement

¹⁶ Project manager at the NGO 'Up Farming' and an expert in improving cities' food systems and building resilient communities

¹⁷ A governance approach that ensures inclusive decision-making by guarantee that everyone's voice is heard and considered.

¹⁸ Expert in ethnographic fieldwork with diverse communities and specialist in permaculture

have come to similar conclusions, highlighting the importance of having a community member on the local side who understands the local language for effective communication to overcome potential barriers.

The active involvement of community members is crucial for the success of a community garden. To give an example, expert Sameera Chukkapalli Holmes advised to involve the community from the beginning by applying quantitative, qualitative, and participatory research to test interest and passion. From her own experiences, individuals might use the garden as a place to hang out but not actively participate in its maintenance. Therefore, she recommended offering community members the opportunity to take the initiative in proposing and managing aspects of the project by deciding the level of personal involvement and taking ownership of the garden. As informants confirmed, testing the interest, needs, and expectations of community members is essential for the long-term success of a community garden. In the specific context of Nova SBE's community garden, I tested the level of interest of both communities through participatory research and observations. I engaged directly with Nova SBE community on campus, placing posters in the entry all (see [Figure 5](#)). The broad range of interests is summarized and presented in [Table 2](#). Engaging with local residents was more challenging due to work commitments and language barriers. To engage with local residents, I distributed bilingual flyers throughout the neighborhood, engaging in conversations with locals (see [Figure 6a;6b](#)). The flyers mainly aimed to inform the neighborhood about the community garden project and provided them with QR codes to register for free activities and a menti-meter board to share ideas (see [Figure 7](#)). Residents reacted friendly, interested, and wanted to know more about the project. [Table 3](#) presents that residents showed a wide range of interests, including gardening, well-being, culture, art and music, networking, and a dedicated space for relaxation. In addition to suggestions for activities, residents expressed concerns about the residential area and the need for activities to be organized quietly. Besides

seeking direct contact with residents, I emailed the local representatives to inform the neighborhood about the community garden at Nova SBE. Participants in the mushroom workshop stated they had heard about the activity via email, and the details had spread through the neighborhood.

4.6 Assumption Testing

I conducted two workshops based on the identified needs and expectations of the community and tested the general interest in establishing a community garden at Nova SBE, as well as the participant's level of commitment and involvement. This iterative approach made it possible to make targeted adjustments based on the experience and feedback gathered from participants. The 'Art in Nature' workshop, ranked highest in participatory research, encouraged participants to explore their artistic talents by painting nature-inspired crafts. The collaboration with Nova Mindspace Club was vital in promoting the event on social media and targeting Nova SBE students (see [Figure 8](#)). In total, 16 out of 30 registered people attended the workshop. The group consisted of the Nova SBE community, primarily students, with one staff member attending. The gender distribution was biased towards 15 women and one man, 13 individuals from Germany and two individuals from other countries. [Figure 9](#) shows that participants enjoyed the creative activity. Participants mentioned a lack of leisure and creative space at Nova SBE, highlighted the emphasis on counseling at the school, and called for more space for creative activity. The survey results (see [Figure 10](#)) underlined the workshop's success, with an average rating of 4.86 out of 5 points and the desire to attend future workshops and advanced sessions for experienced painters. With an NPS of 79, participants were very likely to recommend the event to colleagues. In addition, the survey results revealed strong support for the idea of a community garden at Nova SBE, with over 60% expressing an active desire to use and engage in the garden and 75% willing to invest one hour per week, mainly in design and planning (38%). Reasons for contributing included a desire for community, meeting other

creative people, maintaining the project for recreation, and a sense of fairness in investing time in return for project benefits.

In response to the community's broad interest, the 'How to Homegrown Mushroom' workshop explicitly targeted local residents and delved into mushroom knowledge, their lifecycle, and ecological significance. This workshop was conducted in partnership with the startup NAM Mushroom Farm, involving an expert to enhance the learning experience. The workshop aimed to incorporate feedback from the previous event, adapting it to be more family-friendly and accessible by scheduling it on a Saturday morning. All 17 registered participants actively participated in the workshop. [Figure 11](#) displays the diverse group, that included seven local residents, four Nova SBE staff, and six Nova SBE students representing various nationalities and age groups. The survey results for the second workshop (see [Figure 12](#)) indicate improved outcomes, specifically in terms of overall satisfaction, with an average rating of 4.93 out of 5 points and a desire to attend similar future workshops. One survey participant revealed: *"The workshop was conducted in a very good way. It was a very good mixture of theory and hands-on practice, which led to a very interesting and fun experience. Furthermore, it was very nice to not only get connected and talk to NOVA students but also NOVA Staff members and local people"*. The NPS has increased to 87, indicating improvement compared to the initial workshop. Moreover, the survey results revealed strong support for the idea of a community garden at Nova SBE, with 60% willing to use the garden actively and more than 50% willing to be actively involved in the community garden, stating a desire to 'help the local community', 'getting to know new people', 'make an impact by creating an enjoyable environment at Nova'. Regarding interest level in activities, there has been a shift, as more than 60% of participants were mainly interested in volunteering in planting and gardening, particularly in growing herbs or fruit bushes like cassis. Those who lacked interest stated to live too far away and therefore couldn't maintain the garden. Furthermore,

feedback from the survey reflected participants desire for planting, community building, meeting people, and reducing stress.

5. Discussion

The discussion and conclusion of this paper provide a critical evaluation of the research, followed by a summary of the findings and an outlook for further research.

5.1 Critical assessment

The design thinking methodology, which included participatory research, fast prototyping workshops, and qualitative expert interviews benefited the project due to its iterative nature, fostering flexibility, continuous user involvement, and the ability to swiftly adapt to evolving requirements, leading to user-centric outcomes. However, it should be noted that the findings have limitations and considerations. The iterative nature of the process implies that responses may evolve and change with each new iteration. Consequently, further iterations are required to elaborate findings fully.

5.2 Summary of Key Findings

The findings from various data points clearly show a strong interest for a community garden at Nova SBE, with suggestions for different activities and ways to use the outdoor space. Furthermore, community members want to be involved in the process of creating the community garden, as well as in the maintenance. The establishment and maintenance of a campus community garden entails various challenges such as conflicting stakeholder interests, unstructured communication and governance models and a lack of commitment from university and community side. To overcome those challenges, I sought direct contact with the community through face-to-face conversations to explore strengths, needs, identity, history, and interpersonal relationships to guarantee the sustainable success of the campus community garden.

5.3 Future Steps: Implementing a Community Garden at Nova SBE

It became evident that a long-term strategy is crucial to ensure the success of the community garden at Nova SBE. Therefore, I outlined core steps that I presented to all stakeholders to gather additional input and to define the next steps together. The feedback I received was extremely positive and all stakeholders were supportive and offered to provide help (building needed infrastructure, connections, etc.). To build a foundation, I addressed the essential elements of the physical space. DESIS Lab started negotiations with Cascais Ambiente and requested additional support in establishing the community garden by constructing a ramp for inclusive access and installing water facilities. Cascais Ambiente agreed to provide support and finished building a ramp early December 2023 (see [Figure 13](#)). Furthermore, they worked on water facilities and are still negotiating with DESIS lab about shade and some plants for workshop activities.

Moreover, a focus should be placed on securing funding to build the necessary infrastructure, including seating and plant beds, to facilitate future activities within the garden. Funding will also be needed to organize a spring event to kickstart initial activities on the site, including the construction of elements of the physical space. Institutional support for activities is already granted, as the well-being team at Nova wants to incorporate community garden activities during the well-being week in February 2024. Chief of Sustainability at Nova SBE, Luis Veiga Martins, proposed merging the spring event into the impact week scheduled for April 2024. Other funding opportunities include allocating time to the team in charge of other green spaces around Nova SBE for maintenance, using the Desis Lab budget and applying for the second round of the Prototyping Fund in spring 2024. However, having funding isn't a precondition to kickstart the community garden at Nova SBE. Establishing a community garden in a university context requires time and dedicated volunteers, as exemplified by Horta FCUL and Permagarden at CBS, who initially started without funding.

The most crucial part is an effective governance structure. Various data points showed the successful implementation of bottom-up and top-down elements in the organizational structures of community gardens. In the specific context of Nova SBE, where the community garden is established in a university context, top-down elements are required, as the institution has initiated the establishment of the community garden. Still, community input will be a crucial element in the community garden at Nova SBE. Therefore, I suggest using a combination of bottom-up and top-down elements. The model implemented by Lisbon University serves as a guiding example. Inspired by their model, I recommend forming a core group of 'guardians' who are individuals within the communities and are in charge of the day-to-day responsibilities. Each responsibility will be taken collectively, encouraging a collaborative and shared approach. The responsibilities of the guardians will be diverse, covering areas such as planting and gardening, design and planning, fundraising and community outreach, and administration.

The community engagement, including volunteer work, will be essential for creating and maintaining the community garden. Both communities must be involved: Nova SBE and residents. I started to recruit passionate individuals during the exhibition of my project at the Prototyping Fund, who can envision themselves continuing the project by applying with me to the next round of the Prototyping Fund. On the resident side, Vera Pinto from the Community Engagement at Nova SBE suggested integrating elderly and kindergarten children through the community center in Carcavelos. Therefore, I prepared a community garden presentation in Portuguese to inform them about the project and future activities. As we know from the literature, corporate innovation and change management can be difficult and it's hard to start from scratch. Nova SBE Community Engagement already has a few ongoing projects that are aligned with the aim of the community garden project at Nova SBE. This connection is a starting point that we can benefit and build upon. Also, during the stakeholder meeting, Ines

Vintem¹⁹ from Cascais Ambiente, mentioned the possibility of recruiting 'guardians' from the residents, drawing inspiration from the existing guardian system in their parks.

To provide additional support, I propose to set up an advisory board that will meet yearly to support the guardians and ensure the overall success of the community garden at Nova SBE. The Advisory Board provides strategic guidance on long-term vision and goals, leverages networks for valuable partnerships, and offers mentorship and resources for effective day-to-day management (see [Figure 14](#)). All stakeholders have agreed during the meeting to be responsible for their roles. DESIS lab will be taking an orchestrator role and will take over my role to recruit guardians, engage with some student clubs such as Mindspace and Life at Nova and support the next iterations of this project. Luis Veiga Martins will support this project as one fitting under the sustainability portfolio of the school. Vera Pinto will be responsible for the engagement of the local community. Cascais Ambiente will support the establishment of the physical space and communication with local residents. The students' union will be representative of students' interests and promote future activities on their channels.

5.4 Final considerations

In summary, the research is complex due to its iterative process, and the main difficulties in establishing a community garden at Nova SBE might arise from ineffective stakeholder management and a lack of institutional support. The initial hypothesis proposed has been confirmed: various stakeholders are clearly interested in establishing a community garden at Nova SBE. This interest encompasses a broad desire for an outdoor space facilitating various activities and social interactions. Based on the difficulties identified and intended to inspire further research, the most exciting question is the following: *How can effective stakeholder management be encouraged to manage conflicting interests and ensure sustained commitment from the university and community members?*

¹⁹ Landscape architect at Cascais Ambiente and point of contact of the community garden project

6. References

- Alexandre, Antonio, David Avelar, and Diogo Mendes. 2022. “FCULresta: A ‘Floresta Mãe’ de Uma Rede de Miniflorestas | Faculdade de Ciências Da Universidade de Lisboa.” 2022. Accessed October 27, 2023. <https://ciencias.ulisboa.pt/en/node/14669>.
- “American Community Garden Association I Resources.” 2021. American Community Garden Association. 2021. Accessed October 1, 2023. <https://www.communitygarden.org/resources>.
- Ball, James W., Matthew R. Bice, Nate Bickford, Sonja Bickford, Ava Coughlin, Danae Dinkel, Angela Hollman, Rodolphe Meyer, and Dustin H. Ranglack. 2018. “Community Gardens: Interactions between Communities, Schools, and Impact on Students.” *The Health Educator* 50 (1): 2–10. <http://files.eric.ed.gov/fulltext/EJ1196092.pdf>.
- Bell, Simon, Runrid Fox-Kaemper, Nazila Keshavarz, Mary Benson, Silvio Caputo, Susan Noori, and Annette Voigt. 2016. *Urban Allotment Gardens in Europe*. <https://doi.org/10.4324/9781315686608>.
- Bevir, Mark. 2009. *Key Concepts in Governance*. <https://doi.org/10.4135/9781446214817>.
- Blakemore, Erin. 2020. “Community Gardens Were All the Rage...in the 1700s.” *JSTOR Daily*, May. <https://daily.jstor.org/community-gardens-were-all-the-ragein-the-1700s/>.
- Blasco, Maribel, Albina Dioba, and Isabel Fróes. 2023. “ABOUT ‘Permahaven.’” January 3, 2023. <https://permahaven.cbs.dk/aboutpermahaven/>.
- Booth, Jaime M., Darren Chapman, Mary L. Ohmer, and Kai Wei. 2017. “Examining the Relationship Between Level of Participation in Community Gardens and Their Multiple Functions.” *Journal of Community Practice* 26 (1): 5–22. <https://doi.org/10.1080/10705422.2017.1413024>.

- Brown, Tom. 2019. "How Do People Define Design Thinking?" IDEO | Design Thinking. February 12, 2019. Accessed October 10, 2023. <https://designthinking.ideo.com/faq/how-do-people-define-design-thinking#:~:text=%E2%80%9CDesign%20thinking%20is%20a%20human,Tim%20Brown%2C%20CEO%20of%20IDEO.>
- Byrne, Jason, Emily J. Flies, Penelope Jones, Dave Kendal, Iain S. Koolhof, Suzanne Mallick, Pauline Marsh, and Sue Pearson. 2020. "Trust, Connection and Equity: Can Understanding Context Help to Establish Successful Campus Community Gardens?" *International Journal of Environmental Research and Public Health* 17 (20): 7476. [https://doi.org/10.3390/ijerph17207476.](https://doi.org/10.3390/ijerph17207476)
- Corkery, Linda. 2004. "Community Gardens as a Platform for Education for Sustainability." *Australian Journal of Environmental Education* 20 (1): 69–75. [https://doi.org/10.1017/s0814062600002317.](https://doi.org/10.1017/s0814062600002317)
- Da Cunha, Ana. 2023. "Que florestas são estas a nascer no meio da cidade? Têm nome de um botânico japonês, Miyawaki, e trazem a natureza aos bairros." Mensagem De Lisboa. March 1, 2023. [https://amensagem.pt/2023/03/01/nasceu-dois-anos-primeira-floresta-miyawaki-lisboa-bairros-estao-pedir-mais/.](https://amensagem.pt/2023/03/01/nasceu-dois-anos-primeira-floresta-miyawaki-lisboa-bairros-estao-pedir-mais/)
- Fox-Kämper, Runrid, Nicholas Kirk, Wendy McWilliam, Daniel Münderlein, Martin Sondermann, and Andreas Wesener. 2018. "Urban Community Gardens: An Evaluation of Governance Approaches and Related Enablers and Barriers at Different Development Stages." *Landscape and Urban Planning* 170 (February): 59–68. [https://doi.org/10.1016/j.landurbplan.2017.06.023.](https://doi.org/10.1016/j.landurbplan.2017.06.023)
- Glatron, Sandrine, and Laurence Granchamp. 2018. *The Urban Garden City. Cities and Nature*. [https://doi.org/10.1007/978-3-319-72733-2.](https://doi.org/10.1007/978-3-319-72733-2)

- Gottlieb, Robert. 2022. "Earth Care: A History of Community Gardening from Schools to Prisons." The MIT Press Reader. December 20, 2022. Accessed October 21, 2023. <https://thereader.mitpress.mit.edu/earth-care-a-history-of-community-gardening-from-schools-to-prisons/>.
- Gough, Meghan Z., Sharon A. Lee, Scot Medbury, and Donald A. Rakow. 2020. *Public Gardens and Livable Cities : Partnerships Connecting People, Plants, and Place*. Cornell University Press. <https://cornellup.degruyter.com/view/title/576753>.
- Horta FCUL. 2021. "Permaculture Living Lab." 2021. Accessed October 6, 2023. <https://hortafcul.wixsite.com/home>.
- Howes, Michael, Catherine Marina Pickering, and Jesse Raneng. 2023. "Current and Future Directions in Research on Community Gardens." *Urban Forestry & Urban Greening* 79 (January): 127814. <https://doi.org/10.1016/j.ufug.2022.127814>.
- Jacob, Michelle Cristine Medeiros, and Cecília Rocha. 2021. "Models of Governance in Community Gardening: Administrative Support Fosters Project Longevity." *Local Environment* 26 (5): 557–74. <https://doi.org/10.1080/13549839.2021.1904855>.
- Landscape Designers Sydney. 2023. "A History of Community Gardening (and Where It Stands Within Society Today) - Harrisons Landscape." April 11, 2023. <https://www.harrisonslandscaping.com.au/blog/community-gardening>.
- Lawson, Laura J. 2005. *City Bountiful: A Century of Community Gardening in America*. Univ of California Press.
- Manzini, Ezio. 2015. *Design, When Everybody Designs: An Introduction to Design for Social Innovation*. MIT Press.
- McGuire, Laura, Stephanie Morris, and Tessa M. Pollard. 2022. "Community Gardening and Wellbeing: The Understandings of Organisers and Their Implications for Gardening for

Health.” *Health & Place* 75 (May): 102773.
<https://doi.org/10.1016/j.healthplace.2022.102773>.

Meyer, Arabel. 2022. “College Community Gardens Promote Growth and Healing in Covid’s Wake.” *EdSource*, November 21, 2022. Accessed October 14, 2023.
<https://edsource.org/2022/college-community-gardens-promote-growth-and-healing-in-covids-wake/681593>.

Nettle, Claire. 2016. *Community Gardening as Social Action*. Routledge.
<https://doi.org/10.4324/9781315572970>.

Nova SBE. 2023. “Nova SBE Consolidates 15th Position Worldwide in the Financial Times Master’s in Management Ranking.” 2023. Accessed October 9, 2023.
<https://www.novasbe.unl.pt/en/whats-happening/news/news-detail/id/1043/nova-sbe-consolidates-15th-position-worldwide-in-the-financial-times-masters-in-management-ranking>.

Ponstingel, Daria. 2022. “The Governance of Community Gardens as Commons and Its Role in the Socio-Ecological Outcomes of Gardening in Austin, Texas, USA.” *Socio-Ecological Practice Research* 4 (4): 355–76. <https://doi.org/10.1007/s42532-022-00133-7>.

Rich, Sarah. 2014. *Urban Farms*. ABRAMS, Incorporated.
https://www.google.de/books/edition/Urban_Farms/fCCfET3x7wIC?hl=de&gbpv=1&dq=Rich,+Sarah+C.+2014.+Urban+Farms.+Abrams+New+York.&pg=PA226&printsec=frontcover.

Smithsonian Institution. 2023. “Vacant Lot Gardens : Grown from the Past: A Short History of Community Gardening in the United States | Community of Gardens.” Community of Gardens. 2023. Accessed October 14, 2023.

<https://communityofgardens.si.edu/exhibits/show/historycommunitygardens/vacantlot>

.

United Nations. 2023. "Urban Planning Must Factor in Needs of Migrants, Sustainable Development Forum Hears." UN News. July 13, 2023.
<https://news.un.org/en/story/2023/07/1138682>.

Appendix of Section 3 – Methodology

Table 1 : Overview of Expert Interviews

Expertise	Name	Role	Summary of key insights
Garden Initiative	Antonio Alexandre	Biologist, Educator, Permaculture and Urban Forestry Consultant, and Founder of Horta FCUL at the University of Lisbon	-At University of Lisbon there are a total of five garden projects, one of them HORTA FCUL - The project had some initial difficulties in getting institutional support, it is therefore run on a voluntary basis -As the most difficult aspect of the project, António highlighted the challenges of managing the community -Sociocracy and regular meetings were implemented as strategies to address organizational challenges -All projects at University of Lisbon involve various activities for the communities, such as regular maintenance for guardians, open community garden days, and workshops
Garden Initiative	Ines Valente	Project Manager at Terras Cascais and Garden Coordinator at Mosteira Santa Maria do Mar, Carcavelos	- Terras Cascais started 13 years ago by a group of neighbors, with the support of the local government - Cascais has on total 32 community gardens, 800 plots cultivated by families, vineyards, and orchards - Focus on promoting social capital, improving mental and physical health, and tackling isolation, particularly among older people

			- Main aim: engaging with local community and offer a space to hang out and to be part workshops and events on a regular basis
Garden Initiative	André Miguel	Head of Division at Terras de Cascais – EMAC	- Terras Cascais aims to close the loop by allocating larger plots to entrepreneurs, creating a self-sustaining model - Biggest obstacle: high real estate speculation in Cascais poses a challenge, creating barriers for aspiring farmers trying to access land - Future plans include the establishment of entrepreneurial gardens with training programs to support new farmers and address traditional farming stereotypes
Garden Initiative	Maribel Blasco	Associate Professor at Copenhagen Business School, Coordinator of Permagarden at CBS	- Permagarden started 3 years ago as a response to a call for bottom-up initiatives from CBS management - Permagarden goes beyond the university community and actively involves the local community through events and workshops - In addition, by creating a therapeutic space for students and volunteers, the project aims to reduce stress in the university community - Emphasizing slow solutions, using non-financial resources, and focusing on organic growth, the project has a permaculture approach - Permagarden faced resistance from university departments as it didn't fit in with the agenda of any particular department

			-The project didn't have a long-term commitment to funding and faced challenges in establishing a clear governance model
Garden Initiative	Maria Canelhas	Project Manager at NGO "Up Farming" and an Expert in Improving Cities' Food Systems and Building Resilient Communities.	-Up Farming aims to provide healthy, resilient, sustainable cities through participatory urban farms - From Maria's experience, a governance and operational model should be defined from scratch by keeping the essence of the project in mind - Community projects require community input, clear responsibilities, and organized activities to engage volunteers effectively
Garden Initiative	Tomás Tojo	Garden Designer and Festival Director of Jardins Abertos Festival	- The Jardins Abertos Festival aims to bring sustainability into the urban context and to provide a strategic response to the desire to promote strong, positive relationships with nature -Tomás suggests creating a student's club to connect people through workshops and activities -Also, he mentions that beautiful gardens don't require big budgets, just multiplication skills

Innovation, Design, and Social Change	Anonymous Person ²⁰	Professor at Northwestern University, USA, and an Expert in Design and Innovation	- The expert advises to start with a problem statement and goal definition, before jumping to solutions - Also, the expert suggests starting recruiting people as guardians and form a team as soon as possible - The expert suggests considering different perspectives, including talking to a Nova SBE therapist to gain insights into well-being, and exploring whether a community garden could help students cope with stress
Innovation, Design, and Social Change	Sameera Chukkapalli	Obama Leader and Expert in Human-centered Design Solutions in Diverse Communities	- Each project is unique, tailored to different communities and involves working with community members - Sameera recommends having a local representative who understands the local language in order to communicate effectively -In the community projects she leads, problem statements are developed together with the local communities -In order to sustain the community garden at Nova SBE in the long-term, Sameera recommends to partnership with student clubs
Community Engagement	Vera Pinto	Head of Community Engagement at Nova SBE	-Vera is the Head of Community Engagement Department at Nova SBE and organizes events for the local community on Nova SBE campus (Yoga classes, Finance classes or drawing sessions)

²⁰ The title 'Anonymous Person' represents an interview participant who has not granted consent to use their name

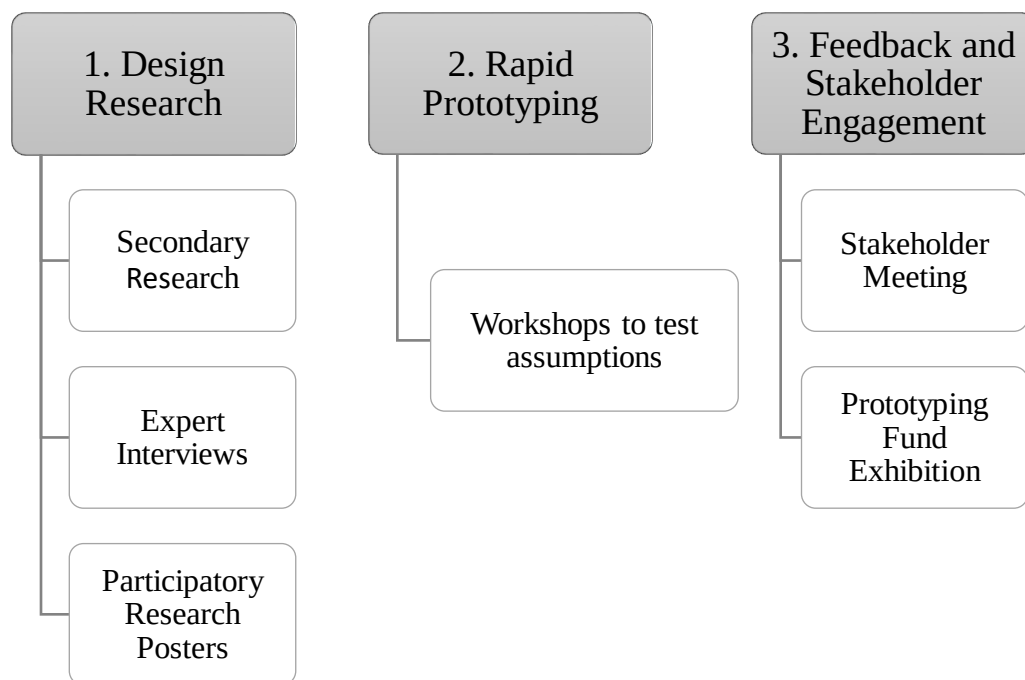
			- She offered to get in touch with the Communitarian Centre of Carcavelos and the Council of Carcavelos in order to reach out to the local residents
Community Engagement	Anahid Roux-Rousier	Expert in Ethnographic Fieldwork with Diverse Communities and Specialist in Permaculture	-From her experience, the way you're speaking to people and the language you're using may impact the way they do see the project itself -She recommends having community rules at the community garden at Nova SBE to ensure a structured communication model -Anahid emphasizes the importance of establishing a clear objective for the community garden while taking into account the community members (and stakeholders) who are involved
Community Engagement	André Rocha	Assistant Professor at the Polytechnic of Santarem, specializing in Design and Technology. Additionally, he holds the role of Co-founder and Scientific Coordinator at Fablab Benfica.	- André highlights the importance of communication and alignment of visions among stakeholders -He emphasizes that balancing the creative and practical aspects of the garden might pose a significant challenge - André also gives the example of a friend who has set up an urban community garden in Peniche, Portugal -The focus of this garden is on creating a communal space rather than prioritizing productivity

Community Engagement	Telma Antunes	Volunteer Work Coordinator at Jardins Abertos Festival	- At Jardins Abertos festival, the volunteer community plays a crucial role, giving the festival a distinct identity - Telma explains that although many people sign up to volunteer, there is a significant drop-out rate due to commitment issues - To create connections within the community and foster a sense of community they organize pre-events -Also, Telma Antunes suggests understanding volunteers' perspective to minimize frustrations and dropouts
Municipal Collaboration	Marco Espinheira	Fundraising Specialist at Nova SBE	-Marco Espinheira emphasizes to define the goal/purpose of the community garden at Nova SBE - In his view, the main challenge is to ensure that the project continues to work across different years -Therefore, it's important to determine a dedicated community member to coordinate the community garden in order to guarantee the long-term-impact of the project - Also, he recommends building partnerships or collaborations with the municipality, students clubs and cultural or youth associations

Municipal Collaboration	Victor Vieira	Works at the Energy and Environmental Agency of Lisbon and is an Expert in Municipality Collaborations.	- He works with small communities in Lisbon, particularly with the NGO Up Farming -Victor recommends that the community garden at Nova SBE should provide workshops and events for the local community -Victor acknowledges that stakeholder management can be challenging due to the diverse nature of stakeholders
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Notes: The table provides an overview of all expert interviews. It shows contextual information and highlights key findings.

Figure 1: Overview of Design Thinking Process



Notes: The Figure presents an overview of the methodology, showing the different steps of my research, using a design thinking approach.

Figure 2: Location of the Community Garden at Nova SBE

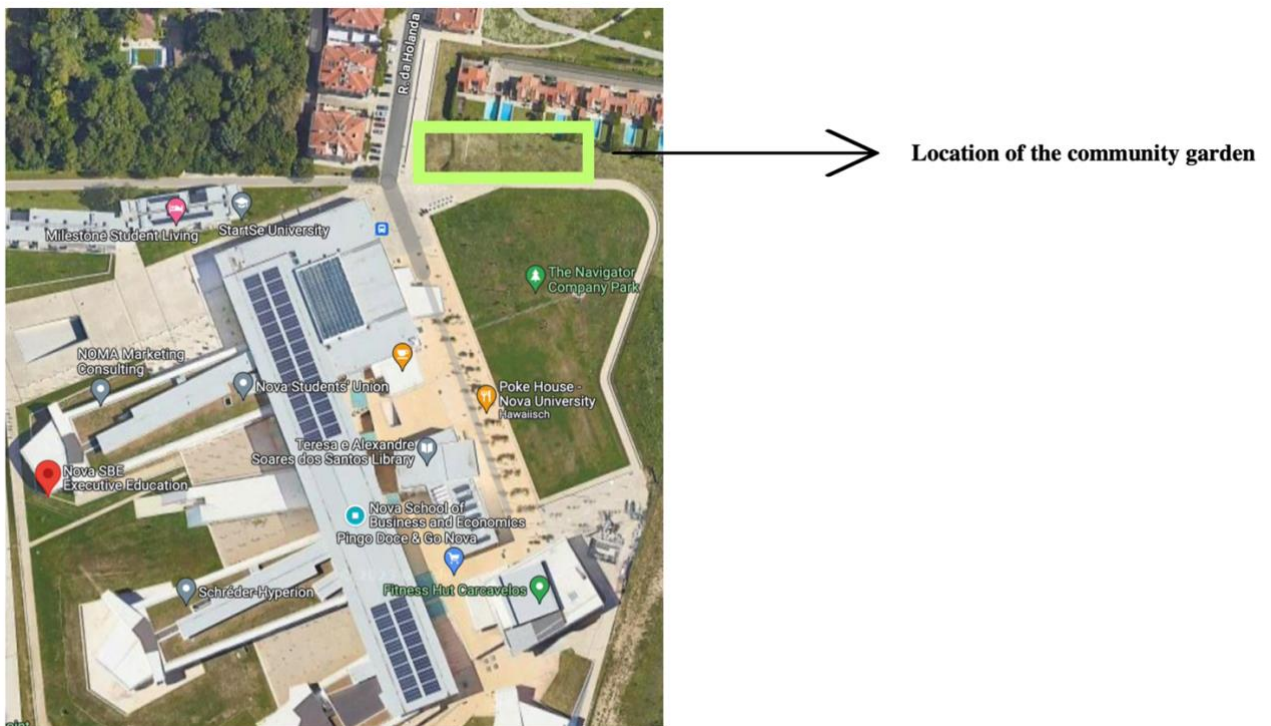
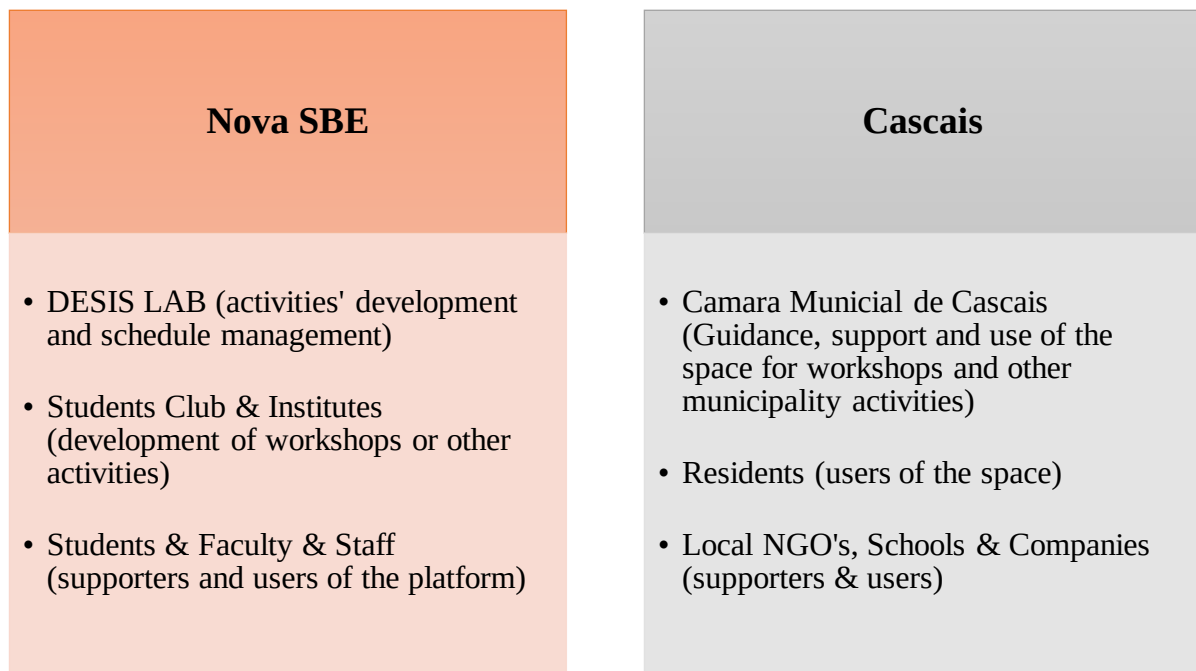


Figure 3: Stakeholder Overview



Notes: The Figure shows an overview of the different stakeholders that are involved in the community garden project at Nova SBE.

Appendix of Section 4 – Findings

Table 2: Results of Poster Campaign at Nova SBE Campus

FEATURES	VOTES
Seating Options	36
Recreational Space	22
Community Workshops	11
Plant Beds	9
ACTIVITIES	VOTES
Art in Nature	23
Yoga Event	16
Mushroom Workshop	13
Gardening Workshop	10
Flower Arrangements and Garden Aesthetics	10
DIY Garden Furniture	07
Composting and Sustainable Gardening	07
Micro Leaves Workshop	04

Notes: Based on [Figure 5](#) (Poster Campaign on the Nova SBE Campus), Table 2 presents the results of the participatory research in a clear tabular format. The themes for the fast prototyping workshops were developed on the basis of these results.

Table 3: Results of Menti-Meter Board: What kind of activities are residents looking for?

Gardening
Theme workshops to seasons
Gardening workshops (4x)
Learning about flowers
Growing vegetables (2x)
Permaculture workshops
Creation of a mini forest
Creation of a community garden
Activities for kids
Well-being
Meditation (3x)
Mindfulness workshops
Well-being workshops
Yoga
Culture
Teach Portuguese culture
Arts and Music
Painting
Outdoor drawing group
Music events
Classic music concerts
Networking
Finding friends
Meeting new people
Space
A Place to rest
Concerns
Respect for neighbors (3x)
Avoid noise
Avoid noisy parties
Everything without noise
Be quiet
We are a residential neighborhood (2x)
Scared of drunk students

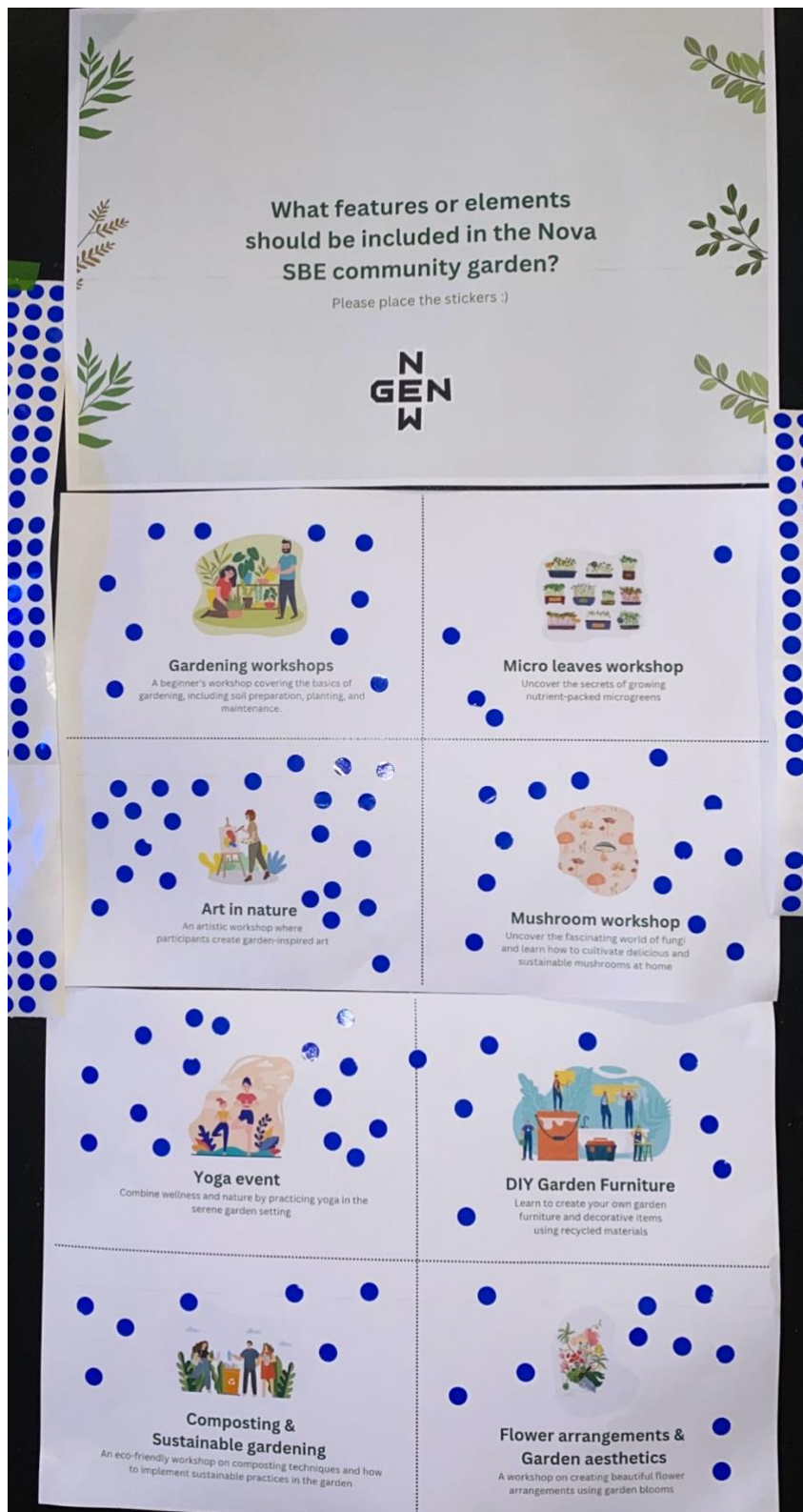
Notes: Based on [Figure 7](#) (Menti-Meter Board: What kind of activities are residents looking for?), Table 3 presents the results of the participatory research in a clear tabular format. The participatory research aimed to include the ideas, needs and expectations of the local residents.

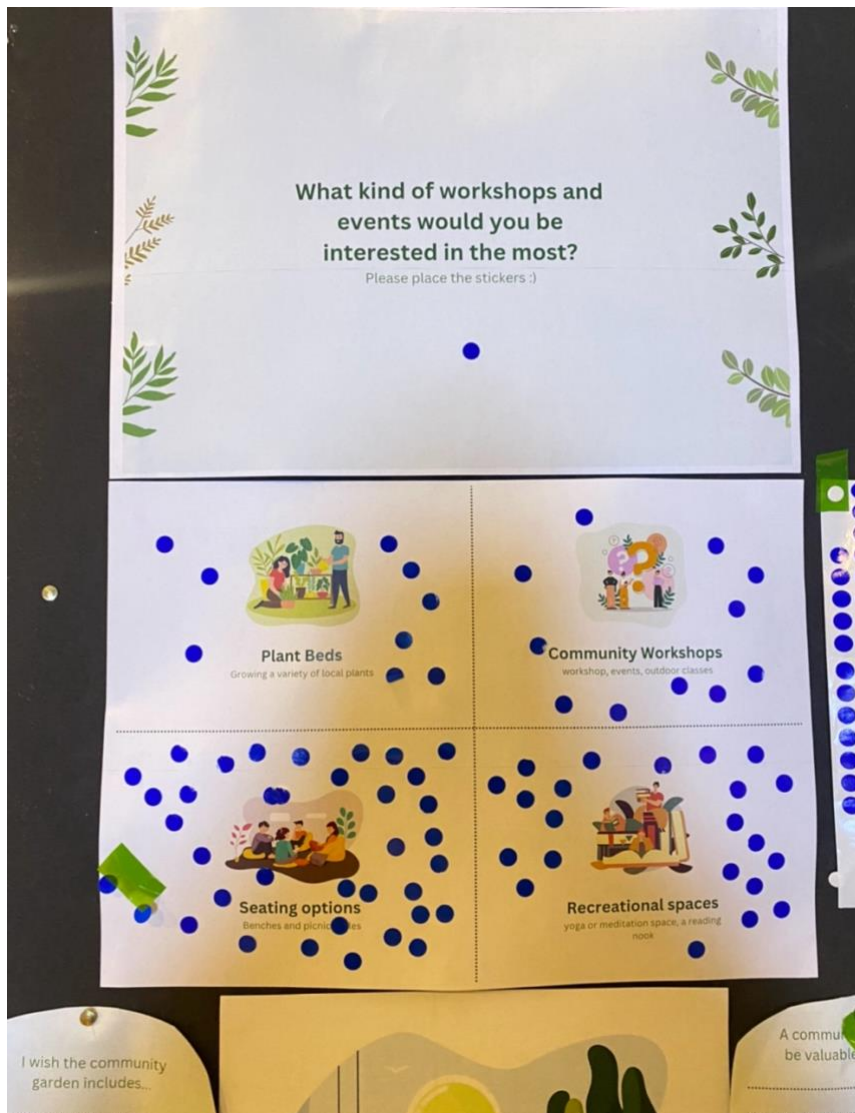
Figure 4: Impressions of Volunteering at Jardins Abertos Festival



Notes: Figure 4 depicts my impressions of the Jardins Abertos Festival as a volunteer, showcasing various activities that I participated in.

Figure 5: Poster Campaign at Nova SBE Campus





Notes: Figure 5 shows a collection of posters that I have designed to engage directly with the Nova SBE community. These posters are interactive, with stickers to express interest and participation.

Figure 6a: Community Garden Flyer for Local Residents – English Version



Notes: Figure 6a presents the community garden flyer for local residents (English version) that aimed to inform residents about the community garden project and ongoing projects at Nova SBE. The flyer provided residents with two QR codes that directly led them to the Eventbrite page for registering for the free activities.

Figure 6b: Community Garden Flyer for Local Residents – Portuguese Version



Notes: Figure 6a presents the community garden flyer for local residents (Portuguese version) that aimed to inform residents about the community garden project and ongoing projects at Nova SBE. The flyer provided residents with two QR codes that directly led them to the Eventbrite page for registering for the free activities and the Menti-Meter Board for sharing ideas.

Figure 7: Menti-Meter Board: What kind of activities are residents looking for?

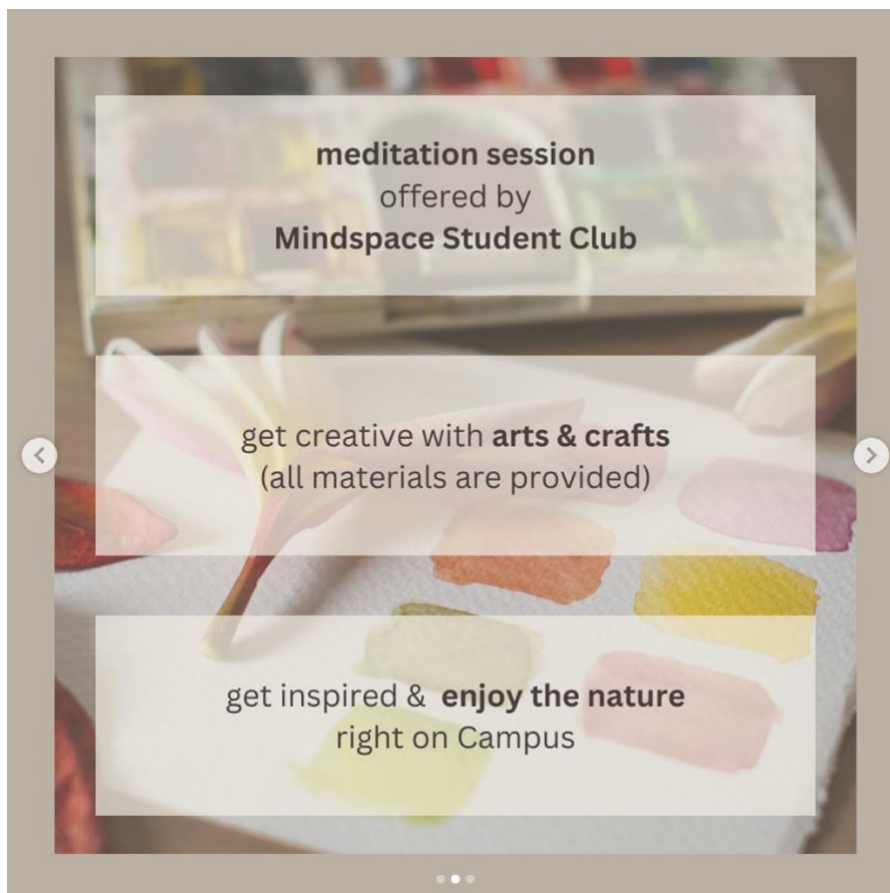
What kind of activities are you looking for at the Nova SBE community garden?/ Que atividades gostarias de ter no Jardim Comunitário da Nova SBE?

49 responses



Notes: Figure 7 shows the results of the Menti-Meter board, accessible through a QR code on the community garden flyer (Figure 6a; 6b). Residents expressed ideas, needs and expectations in both English and Portuguese. For the sake of clarity, I have summarized all the ideas in Table 3, categorizing them by theme and providing English translations.

Figure 8: Promotion on Social Media Account by Nova Mindspace Club



Notes: Figure 8 shows a social media post from the Nova Mindspace Club, illustrating how the Art in Nature workshop was promoted by the student club on Instagram.

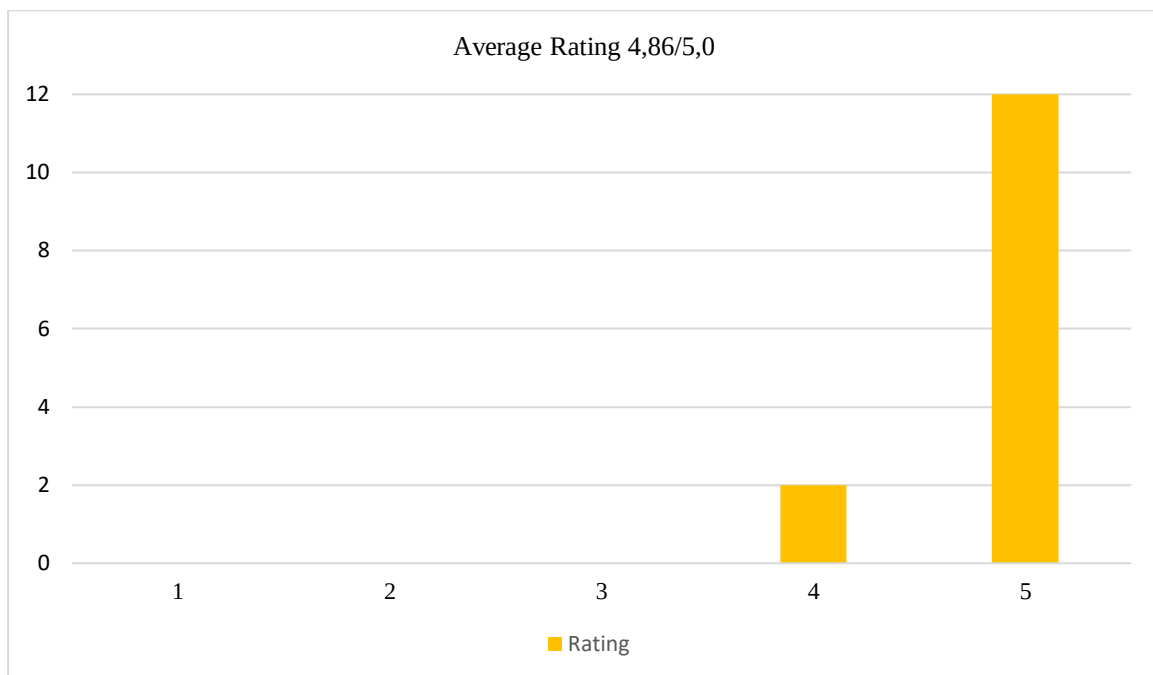
Figure 9: Fast Prototyping Workshop – Art in Nature



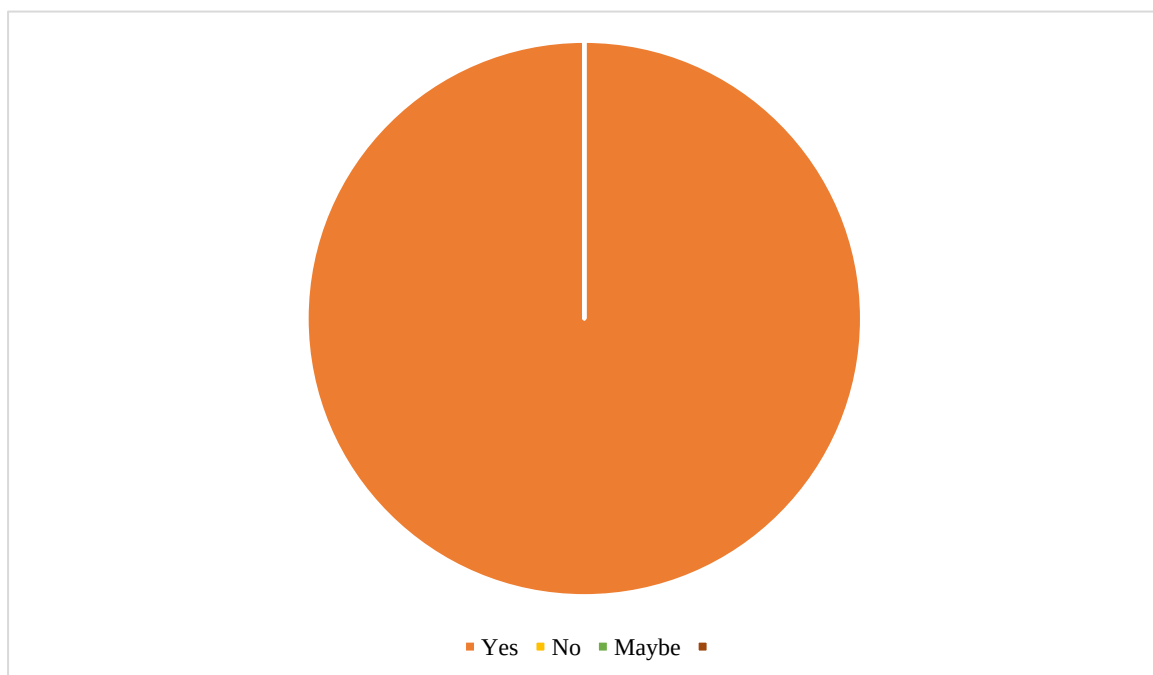
Notes: Figure 9 is a collection of impressions from the Art in Nature workshop. The images capture the presentation I held explaining the painting techniques. It also shows the outcomes, with the participants actively working on their artwork.

Figure 10: Survey Results of Art in Nature Workshop (Total of 14 Survey Responders)

1. How did you like today's art workshop?



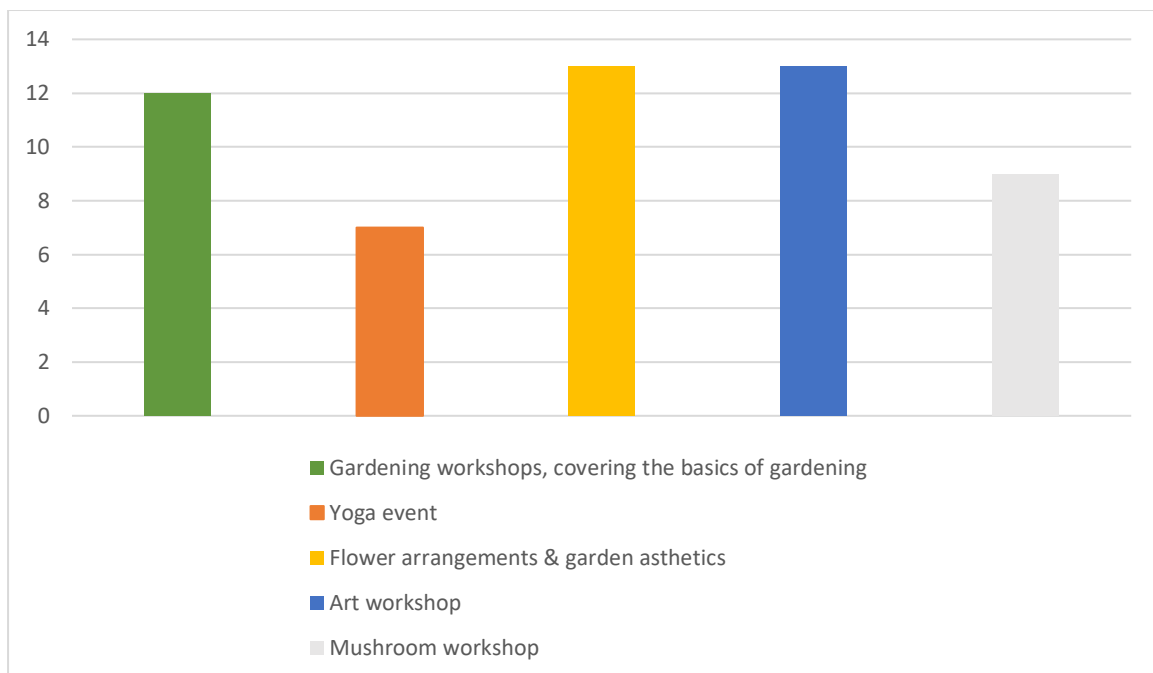
2. Would you like to participate in similar workshops in the future?



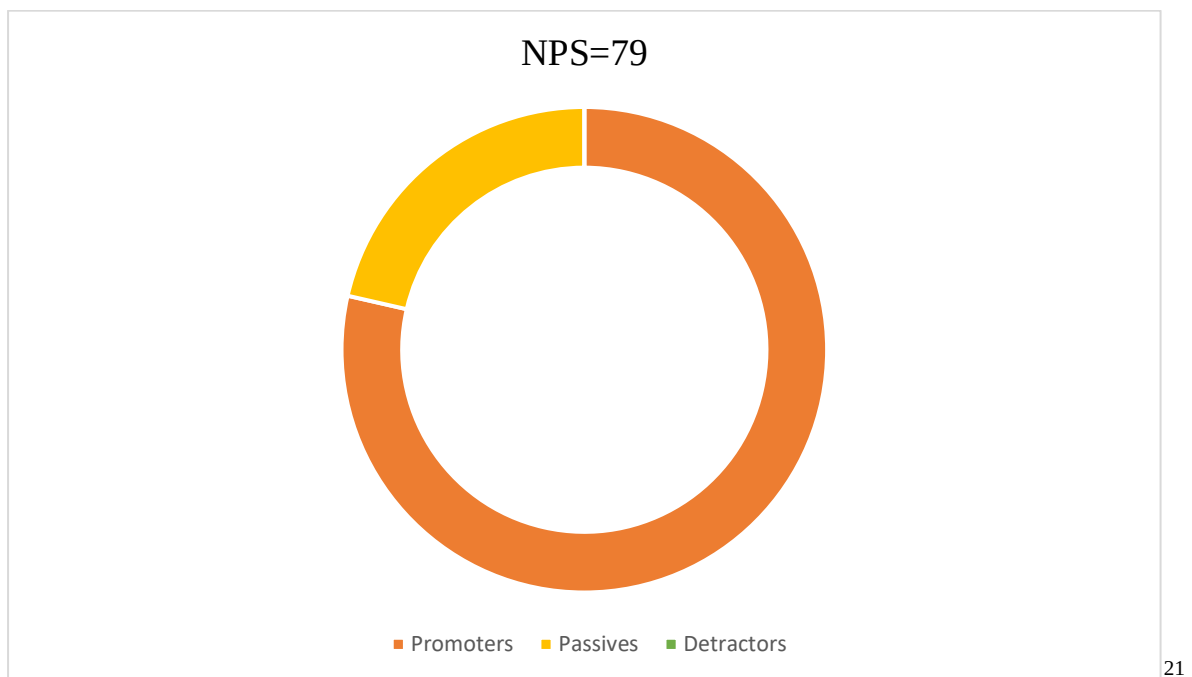
3. Is there anything you felt missing during the workshop?

Id	Name	Responses
1	anonymous	It was super fun and a very nice experience to escape the daily stress. For the future I would even expand the time, to be more relaxed while drawing.
2	anonymous	It was perfect.
3	anonymous	No, I really enjoyed it!
4	anonymous	Maybe a bit more technical input to learn more about some techniques and increase my skills.
5	anonymous	Nothing, it was really well designed and thought through!!
6	anonymous	Nope it was great!
7	anonymous	No, it was lovely.
8	anonymous	Maybe not only show on slides the different techniques but show how you do it in real life and give advice when going around :)
9	anonymous	It was perfect! Thank you so much!
10	anonymous	Everything was great, but it would've been nice to have a few different types of paintbrushes.

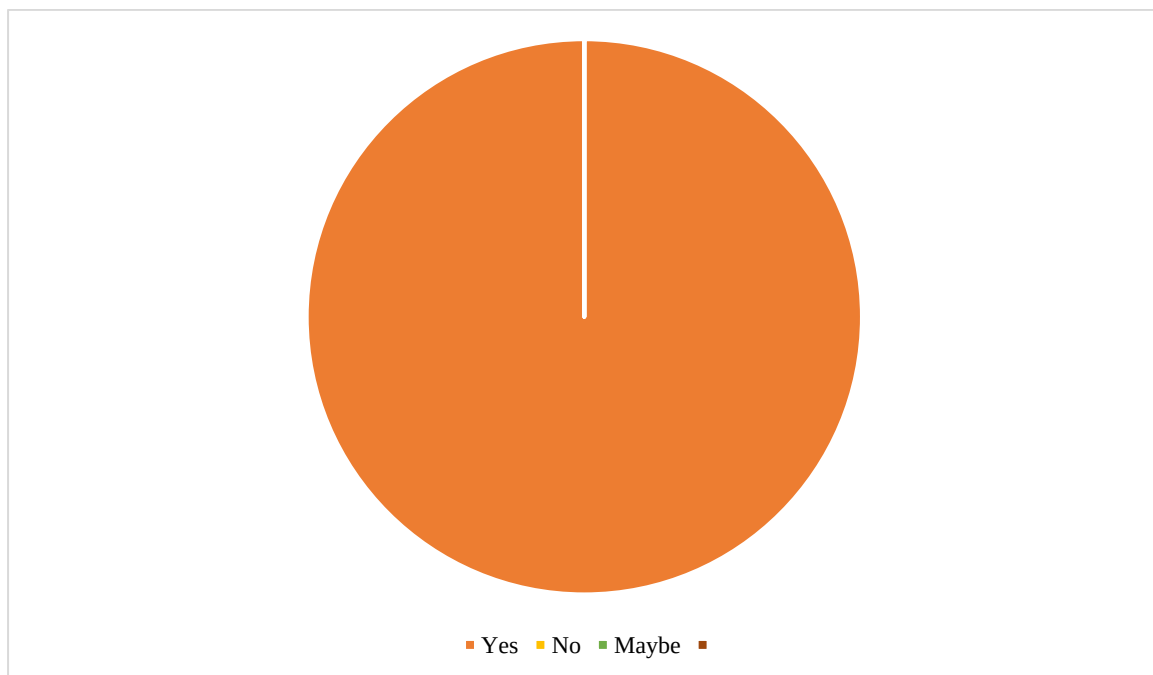
4. Would you like to participate in the following workshops (you can select multiple options)?



5. How likely are you to recommend this event to a friend or colleague?

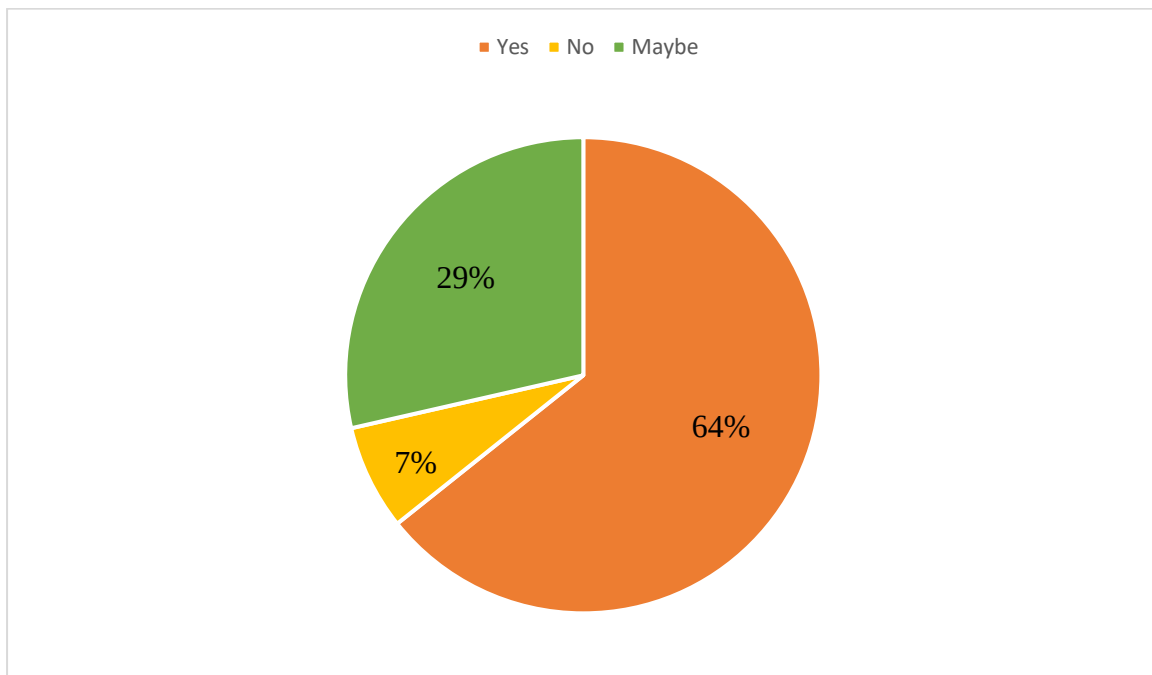


6. Do you like the idea of a community garden at Nova SBE?

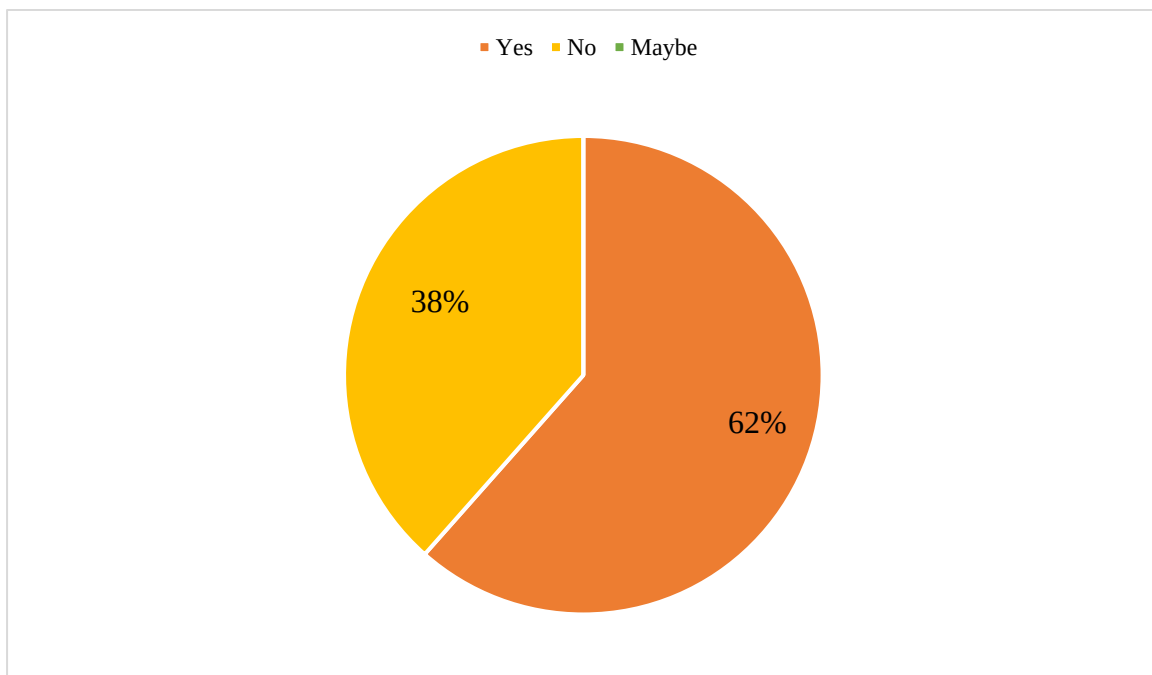


²¹ The Net Promoter Score (NPS) assesses customer loyalty and satisfaction by measuring the likelihood that a customer will recommend a product or service to others. The scores range from -100 to +100, with higher scores indicating more positive feedback.

7. Do you just want to use the garden?



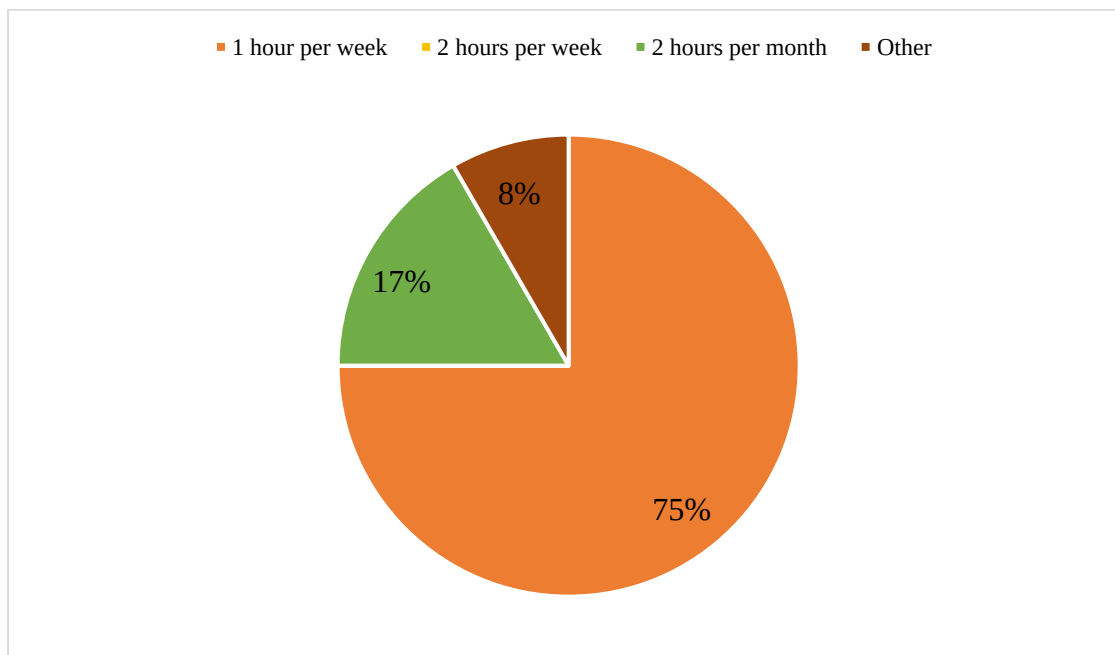
8. Would you like to help/take time to take care of the community garden?



9. Why would you like to use the garden?

Id	Name	Responses
1	anonymous	Because I know I do it for the community
2	anonymous	Community Aspect
3	anonymous	It is nice to have a place like this.
4	anonymous	Because it is a space that several people benefit from
5	anonymous	Because if I use it's just fair to invest in it by helping. I also really like nature and working in nature calms me down.
6	anonymous	To keep it running and give myself and other the possibility to relax.
7	anonymous	To meet other creative people
8	anonymous	It is relaxing
9	anonymous	For the fun of being together with friends

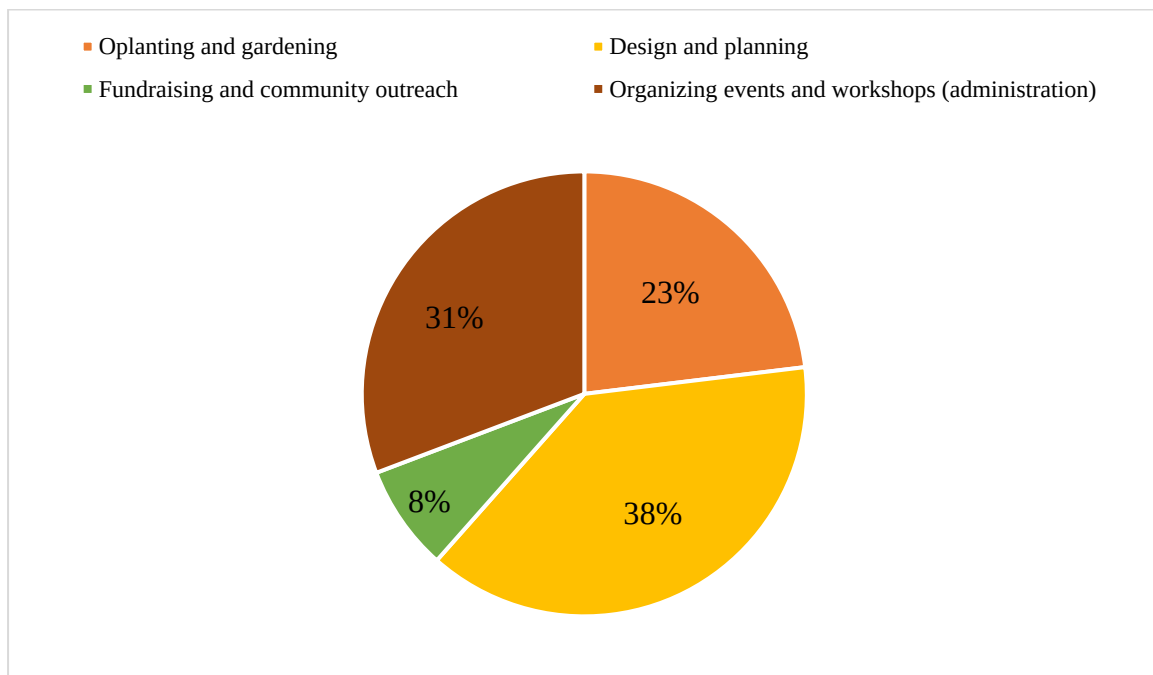
10. If yes, how much time would you be willing to spend?



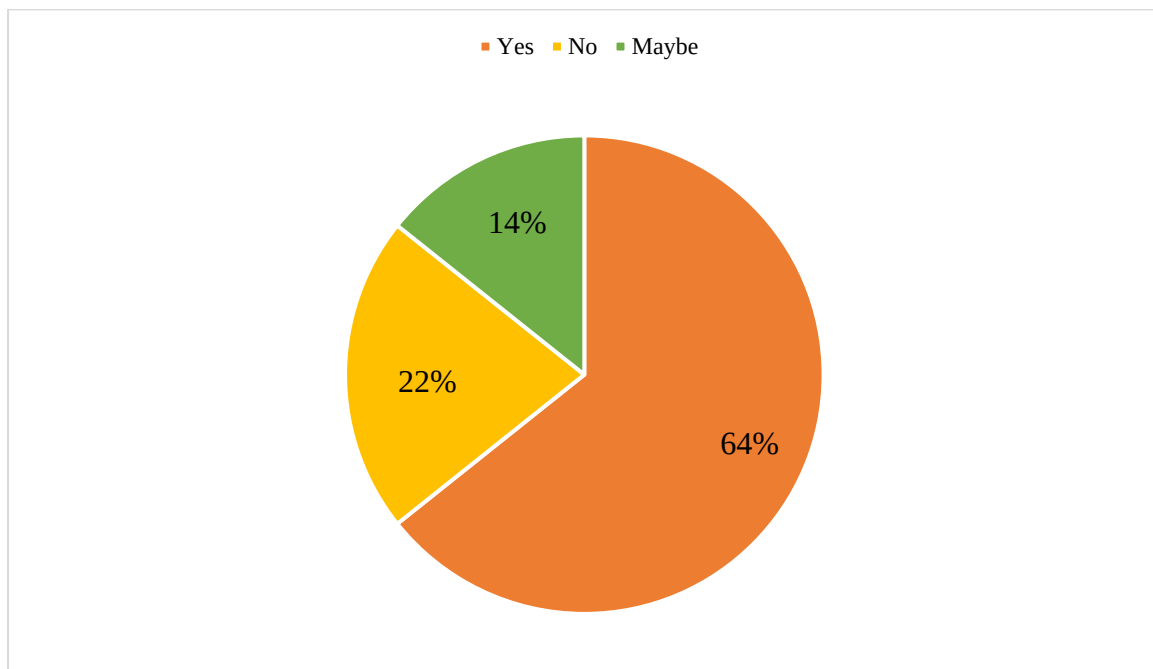
11. If you have selected "other" in the question before, how much time would you be willing to spend?

Id	Name	Responses
1	anonymous	30 minutes a week

12. If you want to help to create the garden, in what kind of activity do you want to be involved?



13. Would you be interested to be part of a gardening club? The club's activities include organizing events and workshops, actively engaging with the community, and creating recreational spaces at Nova?



Notes: Figure 10 shows the results of the survey (using Microsoft Forms) that was carried out after the Art in Nature workshop. The survey aimed to assess overall satisfaction with the workshop, general interest in the community garden at Nova SBE and the desired level of involvement.

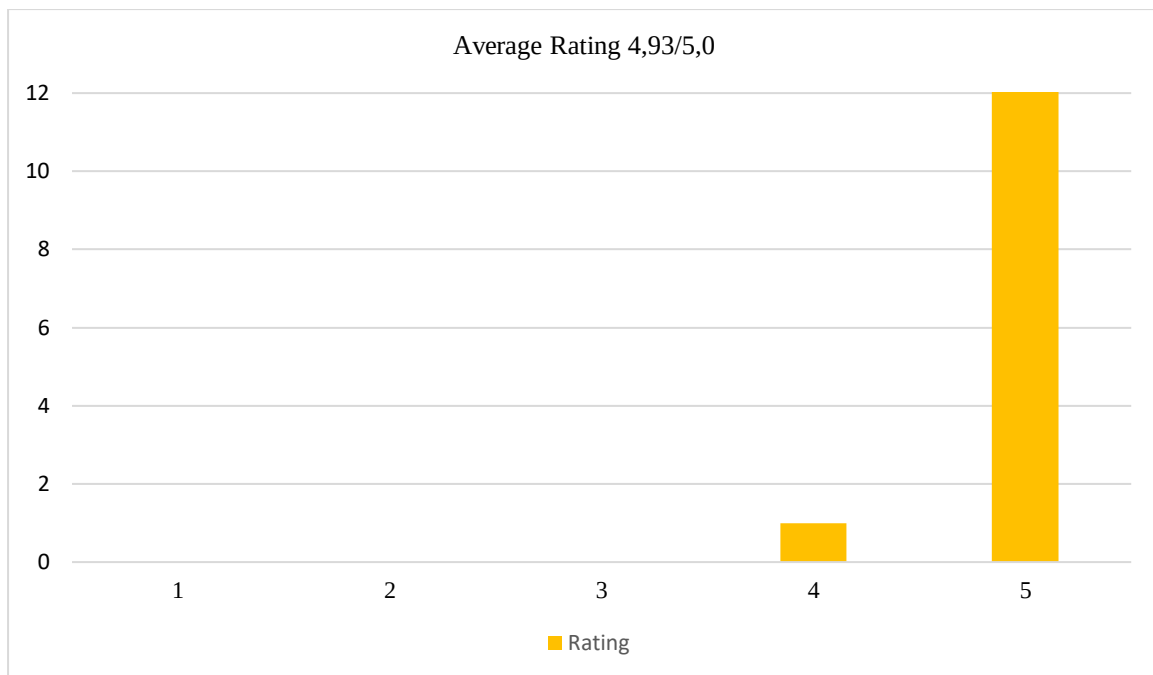
Figure 11: Fast Prototyping Workshop – How to Homegrown Mushrooms



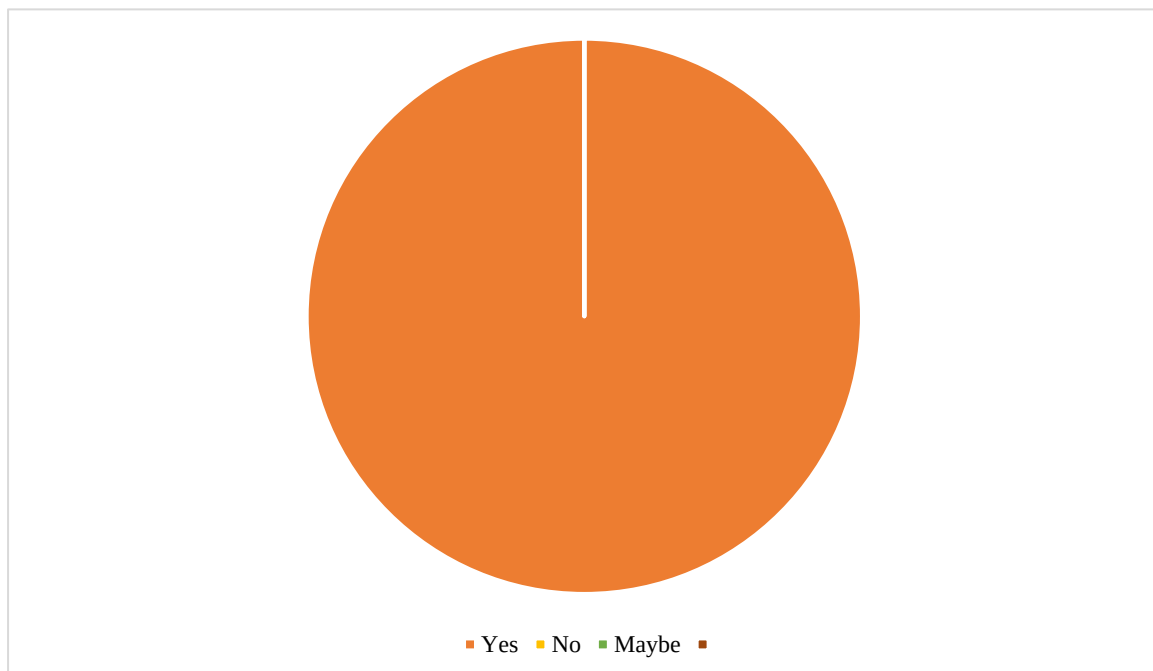
Notes: Figure 10 is a collection of impressions from the How to Homegrown Mushrooms Workshop. The images capture the presentation I held with Carolina from NAM Mushroom Farm. Furthermore, the images show the wide range of participants, including children with their families.

Figure 12: Survey Results of How to Homegrown Mushrooms Workshop (15 respondents)

1. How did you like today's art workshop?



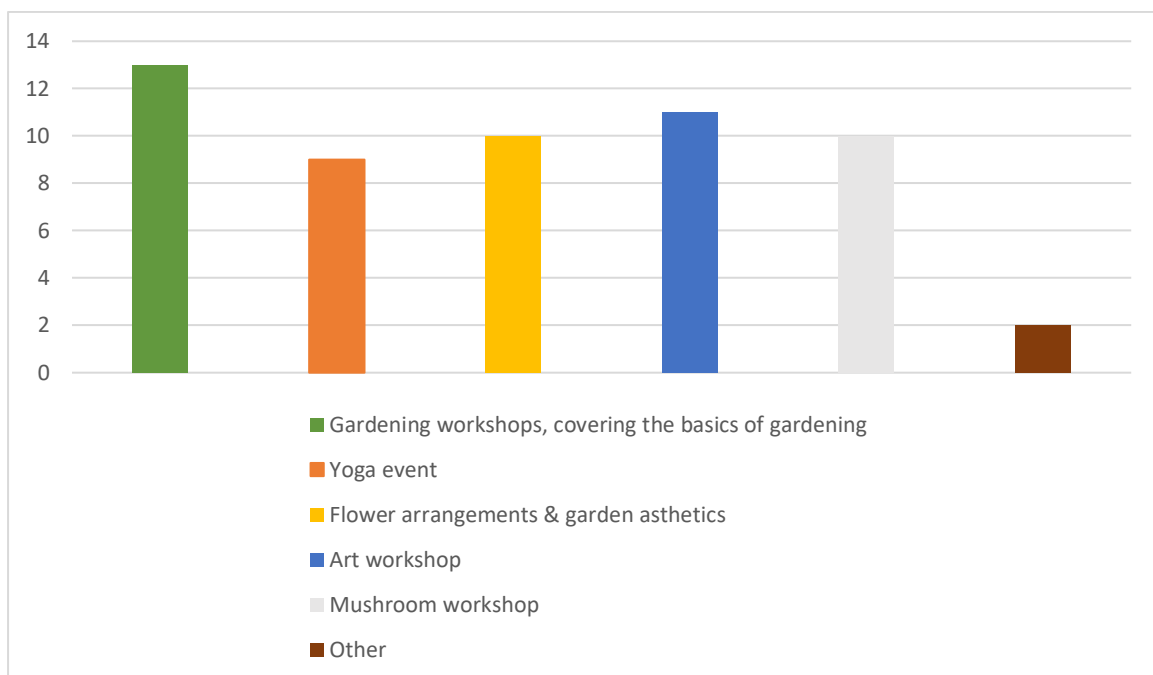
2. Would you like to participate in similar workshops in the future?



3. Is there anything you felt missing during the workshop?

Id	Name	Responses
1	anonymous	O workshop teve um balanço perfeito entre o prático e o teórico. Foi bastante divertido mexer em borras de café e desfazer os cogumelos (=The workshop had a perfect balance between the practical and the theoretical. It was great fun stirring coffee grounds and unpacking mushrooms)
2	anonymous	More practical activities
3	anonymous	All perfect!
4	anonymous	O protocolo apresentado acessível através de um link, por exemplo (=The protocol presented is accessible via a link, for example)
5	anonymous	The workshop was conducted in a very good way. It was a very good mixture of theory and hands-on practice, which led to a very interesting and fun experience. Furthermore, it was very nice to not only get connected and talk to NOVA students but also NOVA Staff members and local people.

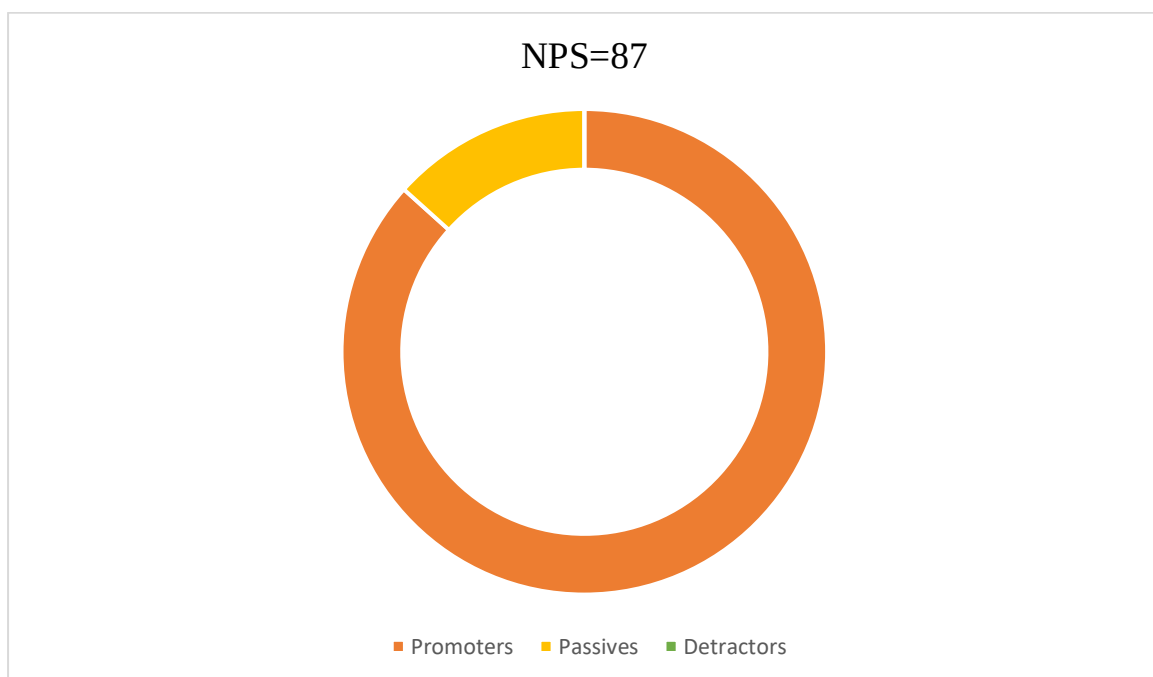
4. Would you like to participate in the following workshops (you can select multiple options)?



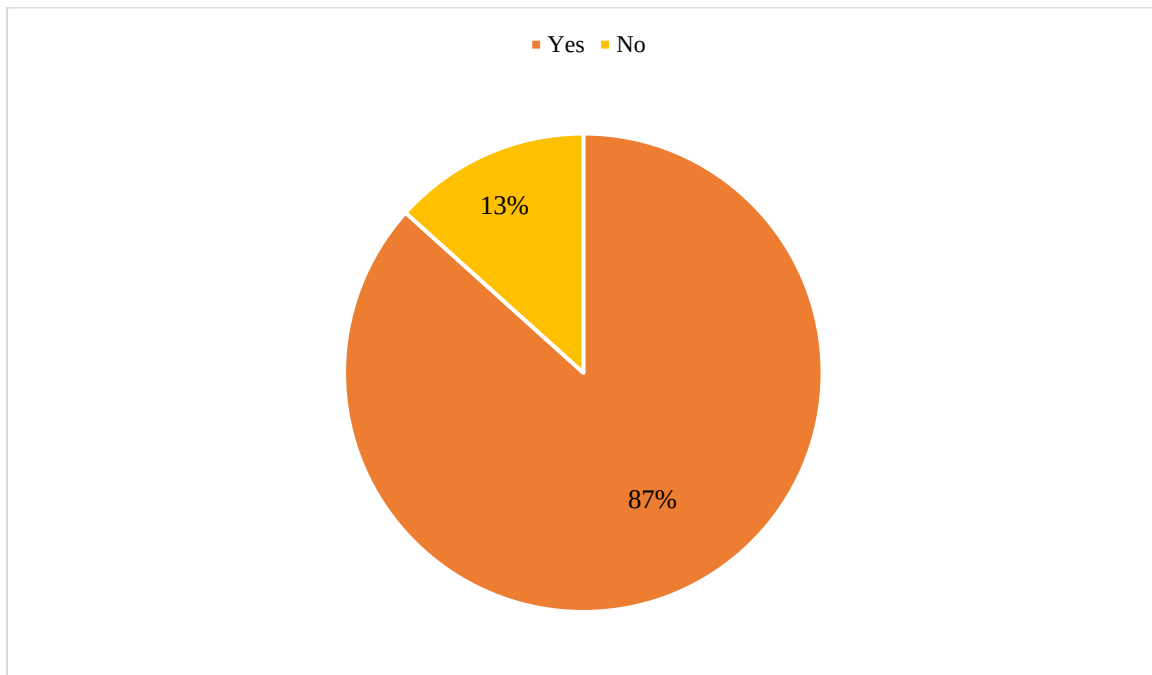
5. If you have selected “other” please make suggestions about future workshops that you’re interested in

Id	Name	Responses
1	anonymous	solar hoovens (making pizza, fostering the sense of community by eating together)
2	anonymous	Reutilização de sobras, combatendo o desperdício alimentar; alimentação saudável e sustentável (=Re-using leftovers, combating increased waste; healthy and sustainable food)

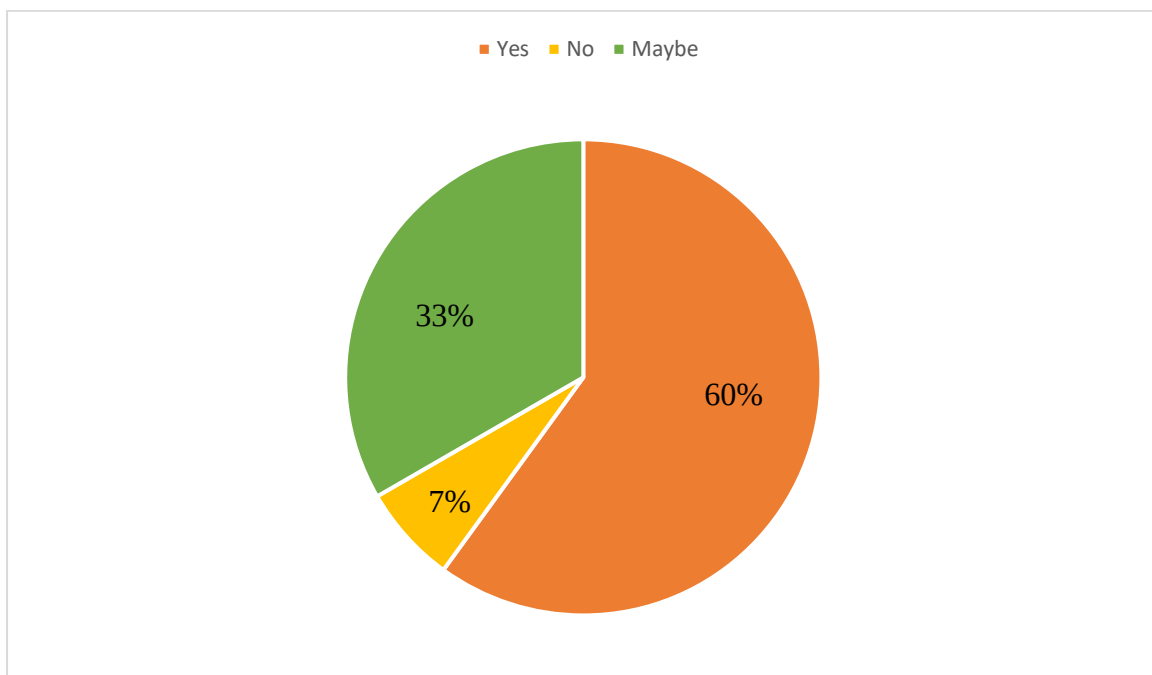
6. How likely are you to recommend this event to a friend or colleague?



7. Do you like the idea of a community garden at Nova SBE?



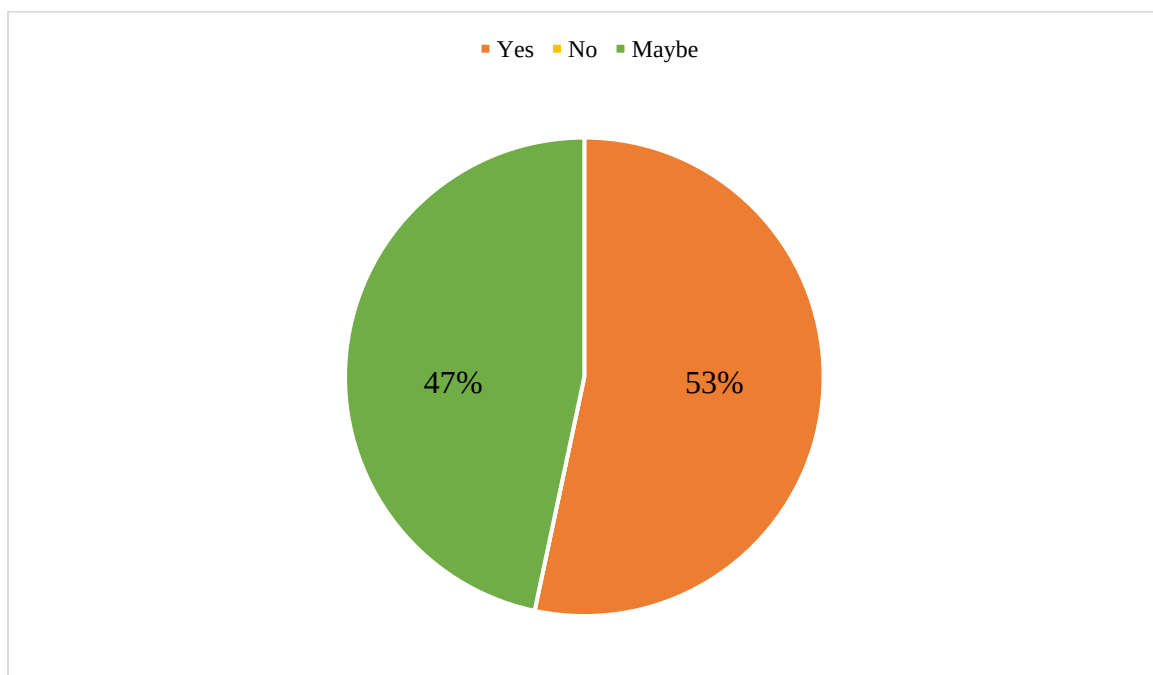
8. Do you just want to use the garden?



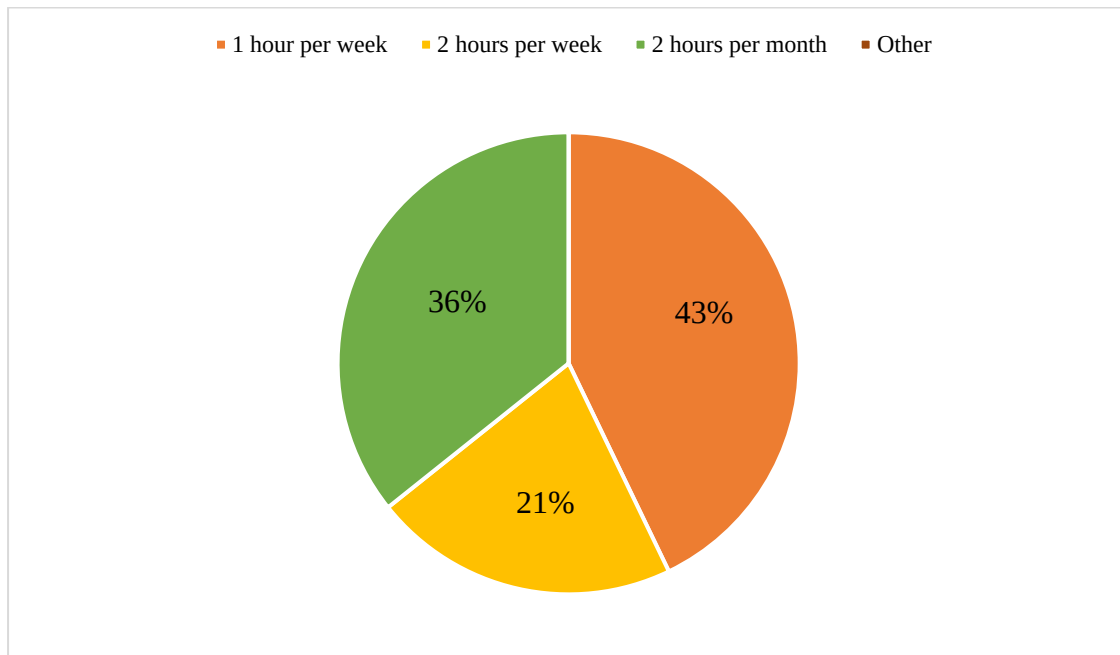
9. Why would you like to use the garden?

Id	Name	Responses
1	anonymous	Community building and relaxing
2	anonymous	Seria bom ter uma horta com produtos naturais (=It would be good to have a vegetable garden with natural products)
3	anonymous	To grow cassis
4	anonymous	Probably not because I live far away
5	anonymous	To plant and take care of the gardens and homegrown my own fruit and vegetables! It's really therapeutical
6	anonymous	To have a place to walk in and rest in between my Nova SBE activities
7	anonymous	For herbs
8	anonymous	Para recolher ervas aromáticas, por exemplo (=To collect aromatic herbs, for example)
9	anonymous	To help plant pants and meet people
10	anonymous	I really like the campus of NOVA. But what I am missing as a student is a place outside, where I could relax and meet people. To be in the nature would help me a lot to cope with the stress and get to know new people.

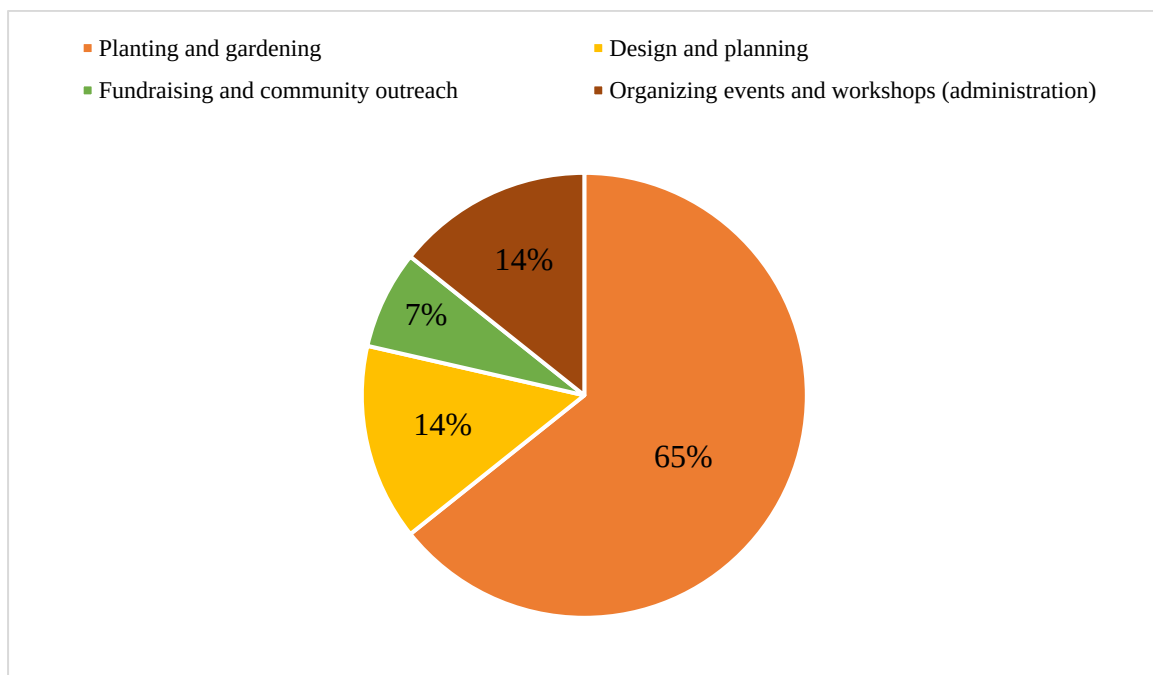
10. Would you like to help/take time to take care of the community garden?



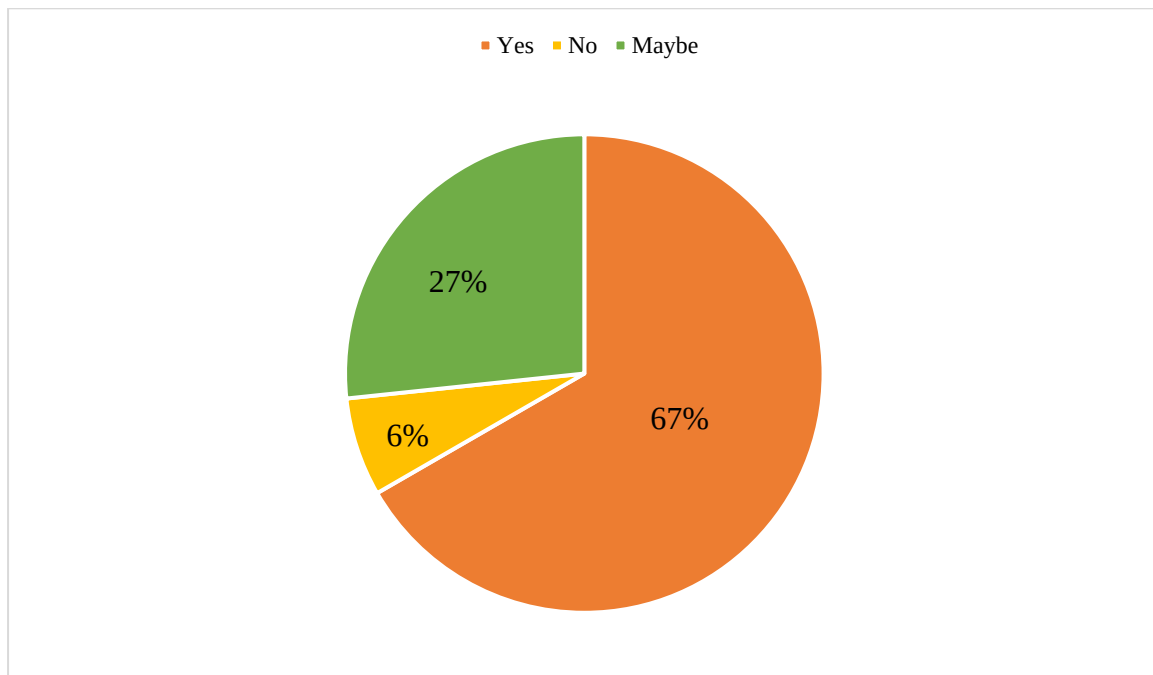
11. If yes, how much time would you be willing to spend?



12. If you want to help to create the garden, in what kind of activity do you want to be involved?



13. Would you be interested to be part of a gardening club? The club's activities include organizing events and workshops, actively engaging with the community, and creating recreational spaces at Nova



Notes: Figure 12 shows the results of the survey (using Microsoft Forms) that was carried out after the How to Homegrown Mushrooms workshop. The survey aimed to assess overall satisfaction with the workshop, general interest in the community garden at Nova SBE and the desired level of involvement.

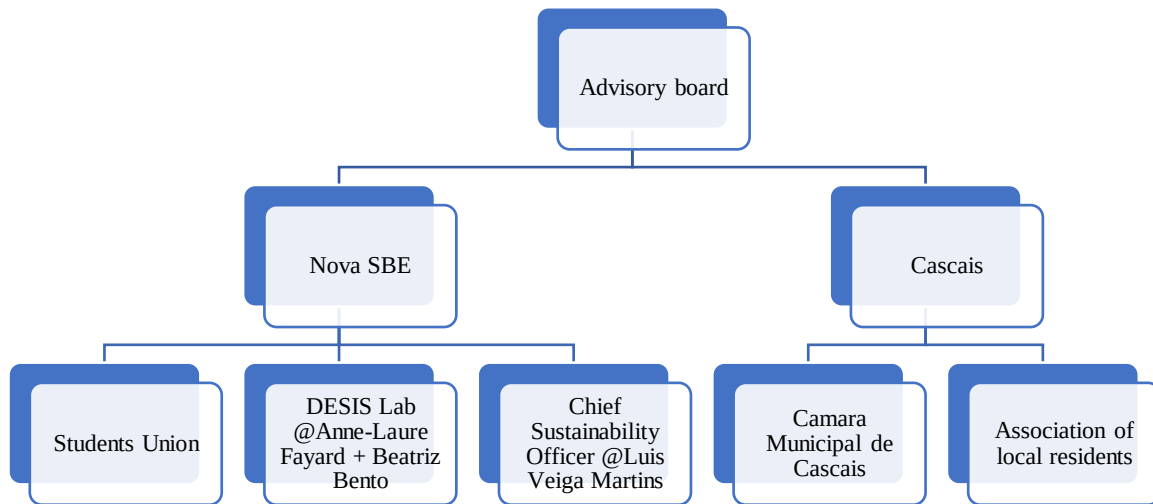
Appendix of Section 5 – Discussion

Figure 13: Physical Space – Cascais built a ramp for an inclusive access of the community garden at Nova SBE



Notes: Figure 13 displays images of the ramp constructed by the Municipality of Cascais. The ramp serves as a symbol of the successful negotiations with the municipality, indicating that the project is underway.

Figure 14: Potential Governance Structure: Advisory Board



Notes: Figure 14 illustrates a possible governance structure for the advisory board, designed to provide guidance to the guardians in strategic decision making.