

Abstrakt

I de senere år er en voksende offentlig og politisk diskurs om ungdomsdeltagelsesunderskud og utilfredshed dukket op på tværs af det europæiske samfund. Imidlertid har unge i årtier reageret på deres viden og bekymringer om klimaændringer ved at kræve handling fra politiske aktører. På trods af beslutsomheden og deres succes med at fremhæve klimaændringernes profil som et presserende mål, er lidt blevet omsat til handling på grund af de unges manglende indflydelse til at påvirke øjeblikkelig politikændring. Denne afhandling er derfor bygget på en tekno-antropologisk undersøgelse af, hvordan unges deltagelse i bæredygtig udvikling kan føre til empowerment. Undersøgelsen er bygget på multimetodetilgangen af youth citizen social science og den teoretiske forståelse critical theory of technology.

Abstarct

In recent years, growing public and political discourse about youth participation deficit and youth dissatisfaction have emerged across European societies. However, youth have for decades responded to their knowledge and concerns about climate change by demanding action from political actors. Despite the determination and their success in raising the profile of climate change as a pressing issue, little has been translated into action because of the youth's lack of power to influence immediate policy change. The nature of this thesis is therefore built upon a techno-anthropological study on how youth participation in sustainable development can lead to empowerment. The study is built upon the multimethod approach of youth citizen social science and the theoretical understanding of critical theory of technology.

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1. Introduction: Climate change and youth participation

Climate change is one of the most urgent challenges of the 21st century. Since the 1970s, the global average temperature has increased drastically at 0.2 °C per decade, leading to various ecological and social impacts. Extreme weather events such as heatwaves, droughts, and wildfires are becoming more frequent and intense because of the rise in temperature and decrease in summer precipitation. On the same note, inland and coastal floods will likely increase across Europe due to extreme precipitation events and rising sea levels (Weilhammer., et al., 2021). The direct impacts of climate change also affect our social systems in which issues such as the breakdown of housing, our food system, generation of migration, increase in hunger, health issues, and economic losses will emerge. These indirect impacts of climate change threaten our cultural belonging and individual and collective identities, in which our social structure and living conditions are at risk (Alves & Schmidt, 2022). The impact of climate change is ubiquitous and is only going to accelerate. A well-published report by the Intergovernmental Panel on Climate Change (IPCC) stated in 2018 that we have fewer than 12 years left to act upon the changes required for responding to the threat of climate change (Intergovernmental Panel on Climate Change, 2018; Neenan., et al. 2021). Therefore, a need for transformative change has become imperative if we want to reduce the impact and its intensity. If the global society continues to live on its current path, this generation's children and youth will bear the worst consequences of climate change (Neenan., et al., 2021).

1.1 On the way to a sustainable path

Climate change and sustainable development are often discussed in separate discourses. However, in recent years there has been a growing recognition of the synergies between the two matters (Narksompong & Limjirakan, 2015). Sustainable development first raised global awareness in relation to the World Commission on Environment and Development's Brundtland report, *Our Common Future*, in 1987. One of its vital aspects was its definition is how sustainable development should "meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987., p. 8). The Brundtland report created a global awareness of how sustainable development should include the three dimensions of the environment, economy, and society to meet society's basic needs, both

now and in the future (Paredis, 2010). The principle of sustainable development was emphasized by the United Nations Framework Convention on Climate Change (UNFCCC), which addressed the need for protecting the climate system in order to benefit both the present and future generations on the basis of equity. Therefore, the social dimensions within the principle of sustainable development raise concerns about equality in the context of climate change, especially in connection with intergenerational dimensions and access to social justice and public participation (Narksompong & Limjirakan, 2015). Regarding equity in sustainable development, the two concepts of intergenerational and intergenerational equity are acknowledged as significant aspects that are highly relevant to climate change. The concept of intergenerational equality points to the necessity of active involvement and participation of citizens of all ages, especially young people, who will bear the consequences of climate change during their lifetime (Narksompong & Limjirakan, 2015). However, when it comes to reality, youth are often excluded from these processes, despite their rights as a citizen to participate and the promotion of including youth in decision-making processes.

1.2 Youth participation in decision-making processes

Regarding youth participation in decision-making processes, youth are often not taken seriously or viewed as cogent citizens with the right amount of knowledge, reflection, or collaborative skills for participating (Hagen, 2021). This derives from the notion that young people are apolitical and too immature to participate in social, economic, or political processes and thereby disengaged from civil action (Mattheis, 2019). Youth is, therefore, not given the same equal opportunity to participate in decision-making processes, and even if they do, their participation is often limited by forms of involvement. Youth are therefore underrepresented in decision-making processes in which they are given few opportunities for participation (Narksompong & Limjirakan, 2015). Consequently, young people are left without the resources and ability to influence the decision-making processes and actually make an impact in society (Hagen, 2021). This leads to the marginalization of young people's interest in political and social arenas, despite the 1989 UN Convention on the Rights of the Child emphasizing youths' right to be taken seriously and entitled to express their views and feelings on issues that concern them.

Even though this is the case, attention to youth participation has significantly increased within modern society. However, this increase is often attributed to the growing public discourse about youth participation deficit and youth dissatisfaction, where modern society views young people as apathetic and highly problematic because of their lack of participation in social, economic, and political processes (Bečević & Dahlstedt, 2022). Therefore, youth participation in the political sector is conceptualized as the involvement and engagement of youth in decision-making processes that regard not only them as individuals but also the public life of their communities. The idea of participation thereby indicates youths' integration into society as proper citizens. However, in practice, most policies resulting from this conceptualizing tend to be weak in their implementation because of the limitation to pre-defined themes and forms of involvement. Doing so tokenizes participating youth and consequently results in youth being reluctant and skeptical towards youth participation (Pohl., et al., 2020). Unfortunately, youths' reluctance and skepticism towards policies facilitating youth participation are ascribed to the dominant discourse of youth being ignorant and incompetent rather than to the weakness of the practice. Consequently, this has resulted in policies focusing on educating young people by providing them with participation competence. This means that these policies are often built upon a deficit-oriented perspective, making participation conditional to the "right" terms established in the institutions of the broader society (Pohl., et al., 2020; Bečević & Dahlstedt, 2022). Therefore, the emphasis on educating young people to become functioning citizens should be seen in the light of the perpetuated representations and discourses of youth as apolitical. Ideological concerns are, therefore, critical drivers for the political development and policy regarding young people, which tends only to include a limited extent of the lived realities and struggles young people today experience (Bečević & Andersson, 2022).

Planting ideological discourses as youth participatory deficit on a generation who do not participate in relation to the standards of the established society ends up pathologizing young people's social realities. It thereby neglects the everyday realities, experiences, practices, dreams, and ambitions of millions of young people, as well as detached participation practices from the limiting structures of unequal power relations that exist in society. This is particularly important as present-day societies are still facing inequalities grounded in class, gender, and race that act as powerful predictors of young people's life opportunities. As an everyday practice, participation is conditioned

and structured by a social order built upon class, gender, and race inequalities. These inequalities are often transmitted across generations, making the opportunity for participation in society unequal at the very beginning of life. Youth are, therefore, excluded and marginalized from political and social processes and affected by the limitations that exist in relation to the inequalities grounded in the opportunities for participation. Consequently, this limits the youth's ability to exercise their responsibility and rights as citizens, challenging the fundamental principles of a democratic society. (Bečević & Andersson, 2022). Despite an increasing interest in youth participation in society, there are too many limitations in the field which ends up creating authentic inclusion of young people. The main obstacle is due to limited and pre-defined topics and forms of involvement defined by adult-led organizations and institutions. The adult's refusal to share power and their view of youth as apathetic and disengaged from civil action only create a barricade for young people to be viewed as responsible and competent partners.

1.3 Youth and climate change

Even though there exists a dominated discourse about youth participation deficit, there is evidence of youth organization, action, and political engagement, especially regarding issues such as global warming, racism, sexism, and discrimination. In youth research, this is referred to as the participatory paradox, in which even though youth are reluctant towards established politics, they still question and challenge the current situation (Bečević & Andersson, 2022). Children and youth have for decades responded to their knowledge and concerns about the challenges we face in relation to climate change by demanding climate action from those in power (Neenan, et al., 2021). However, little has changed during the last decades, in which global society and its economic, political, and social interests have yet to adjust rapidly enough to the growing challenges of climate change (Betts, 2021). The lack of transformative change from global society, especially the governmental response to climate change, led to history's largest youth global movement on climate action. The Friday for futures movement emerged among youth worldwide when Greta Thunberg, a Swedish teenager, began to boycott school to demand more aggressive climate policies from the older generation, including the Swedish government and international organizations. Greta Thunberg's actions accelerated on social media outlets and snowballed into a larger youth movement where school students coordinated weekly school strikes to demand

climate action from world leaders. In more than 1700 cities worldwide, young students walked out of their schools to raise public awareness of the government's inaction on climate change and demand political action (Han & Wuk Ahn, 2020). The youth movement succeeded in gaining global attention towards the challenges of climate change and the urgent need for political action by enlisting a board societal endorsement and prompting policy change. However, despite the determination and the youth movement's success in raising the profile of climate change as a pressing issue, little has been translated into action by those in power (Han & Wuk Ahn, 2020). The youth's lack of power to influence a direct change in relation to climate action and policy aligns with how youth often is excluded from decision-making processes. Despite the youth climate movement's lack of influence, it provided an alternative discourse through the cultivation of youth leadership and civic action that emphasized the need to incorporate youth's interests and concerns into issues of environmental governance, such as climate change (Han & Wuk Ahn, 2020).

2 Problem framing

There is a calling need for creating innovative spaces in which youth can express their concern about climate change and act upon these concerns, especially in relation to youth participation in climate governance, such as climate change. While negotiations on climate change mainly revolve around what is happening at the global level, implementing climate action and sustainable development acts as a response to the changes that need to be implemented at a local, regional, and national level. Therefore, climate change's impact requires a localized response that offers innovative spaces where people can address and prioritize sustainable development (Narksompong & Limjirakan, 2015). However, there are also pitfalls regarding youth participation in urban development agendas and processes, such as participation fatigue or disengagement, especially when young people are not taken seriously or acknowledged as active citizens who can contribute with experience, knowledge, and reflections from their daily lives. Consequently, the lack of incentive ensures a risk of social exclusion that challenges the youth citizenship rights. Consequently, this threatened the fundamental principles of social justice and citizenship (Hagen, 2021; Mansfield et al., 2021). Youth participation is, therefore, strongly connected to the fundamental principle of democracy and citizenship, where participation is viewed as a contested part of democratic development (Bečević & Dahlstedt, 2022). Providing youth with meaningful participation in multiple informal and formal

processes fulfill youths' rights to inclusion in society. Participation, therefore, creates an opportunity for youth empowerment in which youth, through exercising their rights as citizens, can develop personal and social competencies (Narksompong & Limjirakan, 2015). Therefore, there is an increasing need for innovative methods that emphasize the youth's agency and capacity to lead action for change in relation to creating equitable societies. This is particularly important in relation to equity in the context of sustainable development, where there is a pressing need to create spaces for youth to incorporate their interests and concerns into environmental governance issues.

A recent research project that emphasizes this need is the Danish research project GenSkab. GenSkab investigates if and how youth can gain empowerment and social inclusion. Through innovating upon their perceived challenges on climate change and sustainability (See appendix 1). Therefore, social inclusion and empowerment are central concepts within the research project of GenSkab, where empowerment is viewed as the primary mechanism to pursue and achieve social inclusion among youth. It does so by focusing on citizenship and rights as critical factors for increasing social inclusion in which youth can exercise their rights as citizens in a democratic society. Citizenship is therefore defined as "*the link between the state and individual, implying membership of society*" (Butkevičienė et al., 2021., p19). By applying the co-creative and participatory approach of youth citizen social science (Y-CSS), YouCount emphasizes the agency and capacity of youth within the research and innovation processes, as well as through the broader social perspective of civic engagement that refers to citizens' participation in formal and informal activities (Butkevičienė et al., 2021). Y-CSS is thereby viewed as an innovative tool to create youth-inclusive societies where youth, through their roles as co-researcher within the research process, participate on equal terms with researchers in exploring the drivers for social inclusion. GenSkab thereby aims to enable participation in all facets leading to a more egalitarian way of conducting research (Butkevičienė et al., 2021). GenSkab's co-creative and participatory approach brings the youth into the design and development of sustainable solutions to ensure incorporating their perspective on climate change into the design. GenSkab thereby responds to the need to emphasize youth's agency and capacity to lead action for change by creating an innovative space where they can express and act upon their interests and concerns towards climate change, thus creating an opportunity in which youth can fulfill their rights for inclusion.

2.1 The youth citizen social science project at Københavns Åben gymnasium

Together with a danish research project GenSkab, I designed and facilitated a Y-CSS project at Københavns åben gymnasium. The project was based in the urban area of Sydhavn in Copenhagen, Denmark, and built around a co-creative and participatory approach that emphasizes the youth's agency and capacity to lead action for change. The Y-CSS project took place in a nature-geography class and revolved around the topic "*How can we make Sydhavn more sustainable?*". The project introduces the youth to different socio-technical challenges regarding sustainable development in Sydhavn. Confronting the students with social and environmental problems in a local setting provides opportunities for the students to gain personal meaning through experiences. Several research studies show how using the local environment as a learning arena positively affects students' learning outcomes, social relationships, motivation, and health. Furthermore, it creates opportunities for students to engage and act upon real environmental and sustainable issues because of its concrete and authentic nature. By doing so, students can generate relevant knowledge based on their own experiences, which can increase the students' ownership and commitment (Gabrielsen & Korsager, 2018). During these experiences, students need opportunities to discuss and analyze public issues together to determine shared goals and address strategies for overcoming challenges. It is through this kind of decision-making that youth can "*gain autonomy, a sense of self-worth, respect for other people's perspectives, and negotiation skills*" (Chawla & Cushing, 2007., 5), that, in the end, can help foster civic engagement (Chawla & Cushing, 2007).

2.2 Sydhavn as a case area

As mentioned above, the Y-CSS project takes place within the local area of Sydhavn, Copenhagen, in Denmark. However, throughout the last decades, Sydhavn has experienced a negative development that has created different social, economic, and physical challenges. Issues such as low employability and education and a higher dependence on social welfare have created social incoherence in the rest of Copenhagen (Områdefornyelsen Sydhavn, 2015). Additionally, Sydhavn

has experienced a growing residential segregation that has divided the local area. This has created poor coherence within Sydhavn, where issues such as the economic and cultural division between citizens have emerged. The negative development in Sydhavn has resulted in Sydhavn being characterized as a vulnerable urban area in Copenhagen (Politik for udsatte byområder, 2017).

Despite being characterized as a vulnerable area, Sydhavn is strongly regarded as having the potential to transform into a socially sustainable and cohesive community. In recent years, Sydhavn has undergone a long urban renewal investment that has launched new infrastructure projects to create a more inclusive community with local actors, the local administration, and the public housing sector (Områdefornyelsen, 2015). Sydhavn is already a notorious area known for its local actor and self-governing approaches. Locals have for years responded to the societal challenges experienced in the neighborhood through various initiatives. Various initiatives have been initiated that have focused on the social and environmental conditions in the area. Especially have the area focused on urban sustainability by implementing climate change adaptation, recreational green areas, and different substantial and circular activities to strengthen the area both psychically, culturally, and socially (områdefornyelsen 2015). However, most public hearings were attended by adults and seniors who had a specific interest in the area, in which little attention was given to the youth of Sydhavn throughout the renewal investment (Winge & Lamm, 2019; Afsluttende evaluering af Områdefornyelse Sydhavnen, 2022).

2.3 Problem statement

The nature of this thesis is therefore built upon a techno-anthropological study on how youth participation in sustainable development can lead to civic engagement with the following research question:

What are the youths' perceived challenges towards youth participation and sustainable development, and how can they be empowered to act upon them?

1. What is the youths' perspective on sustainable development and youth participation?
2. How can innovating upon sustainable development contribute to empowerment?

My understanding of youth participation should be seen in the light of citizenship theory and therefore be understood in relation to citizenship rights and opportunities for individuals and groups to take part in society (Bečević & Dahlstedt, 2022). Additionally, I take upon a socio-technical understanding to understand how sustainable development influences and is influenced by society. This is particularly important in relation to how sustainable development often is viewed as a technological fix. However, the perception of sustainable development has developed over the years in which it today is interpreted in many ways. This is because of how different concepts, needs, equity, environmental limits, and quality of life are normatively charged in relation to sustainable development. The different perceptions, therefore, reflect the political position of the actors involved in the decision-making processes. Sustainable development is, therefore, a complex concept that is hard to define without an unambiguous policy goal and strategy (Paredis, 2010). Instead, researchers argue how sustainable development should be understood through a framework that involves the fundamental choices humanity is facing, thereby including the normative and political nature of sustainability. Sustainable development should therefore not be viewed as a set of concepts and a desired end-state, but instead embrace the process of sustainable developing in relation to its social context (Paredis, 2010).

3 Theoretical and methodological approach

Throughout this chapter, I will introduce my theoretical and methodological approach to provide insight into my choices and reflections throughout my research process. I will start by introducing my multi-method approach to citizen social science, my theoretical understanding of the critical theory of technology, and lastly, my qualitative fieldwork.

3.1 The citizen social science project at Københavns åbne gymnasium

The citizen social science project at Københavns åbne gymnasium is built upon a multi-method approach, combining the scientific approaches of citizen science and participatory action research, as well as drawing upon tools and concepts from the design methodology of participatory design. The Y-CSS approach within YouCount is rooted in citizen science and participatory action research (Butkevičienė et al., 2021). By combining participatory action research and citizen science, YouCount

aims to conduct a scientific practice that is "*diverse, inclusive, flexible, and reflexive in implementing co-creative hands-on Y-CSS*" (Bilfeldt et al., 2022., p 14). I will therefore start this section by introducing the scientific approaches of citizen science and participatory action research in order to create an understanding of how these two approaches can complicate each other and act as a means for an innovative research approach in which youth are able to emancipate themselves from their societal challenges and youth participation deficit. Afterward, I will present the design methodology of participatory design and how its concepts and technics have created a space for innovation, leading toward the possibility of social change and action.

3.1.1 Citizen science

Citizen science is scientific activities in which citizens volunteer to collect and analyze data. The participatory approaches have increasingly grown to include the political, social, cultural, and scientific spheres. However, fully participatory projects are rare in relation to citizen science, especially in healthcare and environmental science. Not all citizen science project is intended to include a full scale of participation. However, research results can shape significantly by the degree and quality of public participation in project design. The emerging practice of citizen social science, a term associated with citizen science activities in social science and humanities, facilitates participants' contribution to research (Hidalgo et al., 2021). Social sciences and humanities add a social dimension that opens a wide methodological spectrum to enrich citizen science with new approaches and to increase the participation of citizens (Tauginienė et al., 2020). Unlike the conventional form of participating in a research study, such as giving an interview, responding to a survey, etc., citizens, instead, are engaged in designing or/and conducting the research process by various modes and channels of ideation, data collection, analysis, dissemination, or impact. Based on the long tradition of participatory approaches in social science, such as participatory action research and co-production of knowledge, citizen social science thereby embraces a methodological stand that impacts both the scientific rigor and inclusiveness of knowledge production (Albert et al., 2021). Citizen social science does not only consolidate the methodological approaches of social sciences and humanities but also situated social issues or concerns expressed by citizens at the core of its research. Situating citizens' social issues and concerns at the center of the research have a strong implication in terms of the legitimacy of the research as well as giving a voice to vulnerable

social groups or communities (Bonhoure et al., 2019). Citizen social science thereby embraces a unique form of expertise from citizens' everyday experiences and practices through a co-created research process that emancipates citizens' expertise and civic epistemologies (Albert et al., 2021). Citizen social science should therefore be understood as a research approach that focuses on the concerns of citizens and their contextual knowledge. Additionally, the social dimension of citizen social science provides for the design of evidence-based policies that support the social concerns expressed by citizens and thereby have a significant potential for the inclusion of disadvantaged social groups or communities. Citizen social science, therefore, have a significant potential for innovative knowledge production by embracing a collaborative research process in which citizens, thereby, enable access to a large scale of empirical data generated in situ (Albert et al., 2021).

In the academic literature, citizen social science is, however, a relatively new concept that has only now begun to become more prevalent. Even though that is the case, most literature on citizen social science is to find in the disciplines of citizen science and environmental sciences. Additionally, citizen social science projects in a school setting are rare. However, evidence can be drawn from youth-focused citizen science projects in relation to understanding how one can conduct and design a citizen social science project aiming towards creating social change in relation to youth societal challenges. In "*Youth-focused citizen science: Examining the role of environmental science learning and agency for conservation*" Ballard et al. (2015) investigate how youth participation in environmental science and decision-making can contribute to conservation and environmental problem-solving in the future. They argue how the individual participant can learn and be personally impacted through participating in such a way that they behave environmentally responsibly. Within their study, they identified key processes and conditions in which youth took up environmental science that contributed to conservation knowledge, skills, and action. The most important processes were; "*the time youth spend participating, relationship to the place they are studying, and whether or not youth perceive the science they are doing as real or authentic*" (Ballard et al. 2015., 73). They identified how extended projects with the same group were essential for the process, allowing students to specialize and identify their expertise and creating ownership over the project. Likewise, they observed how the citizen science project impacted the youths' perceptions and relationships to the place they studied through repeated experiences that contributed to the

creation of value in relation to their participation in the scientific and local communities. Additionally, they suggest how citizen science projects should create opportunities for youth to take ownership and responsibility for their data collection by analyzing and disseminating findings to stakeholders (Ballard et al., 2015).

3.1.2 Participatory action research

As mentioned above, citizen social science is often linked to participatory action research (PAR). The traditions within the field of action research embrace a broad range activity and have emerged across various disciplines, often because of the political, practical, and epistemological differences in the problems its encounters. Because of its diverse nature, action research is often referred to as an umbrella term for research based on democratic and inclusive values, aiming to improve the rationality and justice of participants in their own social practice (Kemmis et al., 2014). Therefore, action research is not viewed as a fixed method but as a collection of principles, theories, and methods that brings together action and reflection, as well as theory and practice, through a participatory approach. The common characteristic of action research is its aim toward social change, in which social practices only can be understood and changed in their naturally occurring context. It thereby embraces the notion of knowledge as being socially constructed in which its research is embedded in a system of values and human interaction. Action research, therefore, rejects the objectivity in conventional research in favor of, an *“explicitly political, socially engaged, and democratic practice”* (Brydon-Miller et al., 2003., 13), in which social actors can act upon and challenges the unjust and undemocratic social practices (Brydon-Miller et al., 2003).

The characteristic of participatory action research is its participatory approach, in which social actors become actively involved in the research process, from research design to dissemination. It is thereby defined as research conducted through a participatory approach with social movements or actors to contribute to social change (Andersen & Bilfeldt, 2016). It thereby supports the capacity and expertise of the social actors that experiences the issues firsthand and thereby is viewed as a democratic and non-coercive research with and for the participants involved. PAR can therefore be understood as a collaborative process in which the researchers and the participant work together to create social change and emancipation from the dynamics of social exclusion in society. In doing

so, PAR rejects the dichotomy between subject and object, and, therefore, recognizes the value that exists in the knowledge, which emerges from the social actors within the process, and supports collective action for the creation of change that is based on the knowledge that the social actors have developed. In this way, PAR can open new insights and understandings that arise due to the broken dichotomy between researchers and participants. Through this more open and democratic research process, knowledge can be built upon social actors' everyday experiences and practices, thus giving vulnerable citizens a voice (Andersen & Bilfeldt, 2016). As mentioned above, action research is not a fixed method. However, the success criterion for an action research approach is to challenge and change unequal power relations and power resources in society. The purpose of PAR can be understood as social actors' capacity building to fight social exclusion by improving democratic spaces, also known as empowerment (Andersen & Bilfeldt, 2016).

3.1.2.1 Empowerment

Empowerment is an important goal in participatory action research. Historically, empowerment originates from the Brazilian educator and philosopher Paulo Freire, who defines empowerment as understanding various social, political, and economic contradictions and acting against oppressive elements in real life. Aligned with Freire's definition, empowerment is today understood as transformative processes in which people can improve their capacity to create, manage and control various material, social, cultural, and symbolic resources within a society (Andersen & Siim, 2004). Empowerment is thereby not only a goal but also a process through which people create the opportunity to counteract powerlessness and lack of control over their living conditions and thus develop the capacity to change both societies and themselves. Empowerment, therefore, refers to both a subjective dimension of empowerment, as well as an objective dimension. The subjective dimension is the development of identity, abilities, and capacity to utilize one's opportunities for the creation of positive changes. The objective dimension deals with societal and institutional changes that affect individuals' and communities' opportunities for improving their situation, thus creating positive change through new rights and better access to relevant resources (Andersen & Bilfeldt, 2016).

Participatory action research can thereby open up new insights and understandings because of its rejection of the dichotomy between researchers and practitioners that exists in conventional research. Additionally, its open and democratic process generates knowledge based on the local realities in which social actors become empowered to act upon and challenge their unjust and undemocratic social practices (Andersen & Bilfeldt, 2016).

3.1.3 Citizen social science and participatory action research in relation to my thesis

Through placing participatory action research within the approach of citizen social science, the CSS project at københavnns åbne gymnasium acknowledge a process in which students and researcher work as equal participants. Additionally does it embraces a research process in which research questions is generated by participants with the aim of creating social change. This is particularly important in relation to my practice in which I aim for understanding how youth participation in sustainable development can empower them and create social change. Combining the action research and citizen science is also something that Evans-Agnew and Eberhardt mentions in *"Uniting action research and citizen science: Examining the opportunities for mutual benefit between two movements through a woodsmoke photovoice study"* (Evans-Agnew and Eberhardt, 2019), the authors address how the reflective nature and power relations that are encouraged in action research can enlightened citizen science. Additionally, the combination of action research and citizen science creates a space for integrating the empirical experiences of the participants' knowledge. The impact of action research and citizen science can generate a more in-depth collective understanding of complex challenges and encourage action in response to the challenges that the participants encounter throughout the research.

3.1.4 Participatory design

As mentioned above, the citizen science project at Københavnns åbne gymnasium builds upon a multi-method approach, combining the scientific practice of citizen social science and participatory action research, as well as using technics and tools from design methods as a means for innovating

upon youth's interest and concerns towards climate change and sustainability. In doing so, the citizen social science project at Københavns åbne gymnasium adopts the principles of participatory design in the research process as a method to support innovative initiatives for social change and empowerment among the youth.

Participatory design is a design-oriented research methodology, driven by a socio-technical approach aiming toward engaging non-designers in various design activities. It emphasizes the practice of non-designer's use of technologies through a collaborative partnership that aims towards designing artifacts, activities, or systems upon users' everyday practices (Simonsen, 2013). The participatory design uses a broad repertoire of tools and techniques, providing materials and setting rules for design dialogue, mock-up, and prototyping techniques, enabling participants to collaborate in constructing prototypes despite their lack of a professional design background (Sanders et al, 2010). Participatory design tools and techniques become particularly rich and productive when they are situated in a collaborative context, in which they can support participants in developing detailed oriented accounts and representations of their current and future practice. Knowledge thereby is situated throughout a complex of tools, technics, and interactions, where participants actively can engage in reviewing and modifying their everyday practice. Participatory design is thereby driven by a social interaction where users and designers can collectively share experimentation and reflect together on ideas and visions in a design process (Simonsen, 2013). In doing so, the participatory design approach can open tacit aspects of human activity, thereby creating an empirical understanding of the use of technologies. However, not only does participatory design aim towards empirically understanding these activities, but also envision, shape, and transcend them in ways that participants find positive (Spinuzi, 2005). The aim is, therefore, to enable participants to take advantage of technologies through (re) configuring and appropriating them and thereby redesigning their practice in positive ways. Participatory design can be a fruitful methodological approach for producing mutual learning and transformative outcomes, especially when participants are positioned as agents with voice and resources within the research process (Simonsen, 2013).

Participatory design can be a promising methodology in relation to engaging youth in sustainable development and supporting their practice. In "*Design-based approaches to engage youth in the*

transition to sustainability", Najla Mouchrek (2017), explores the integration of participatory design in an educational setting to promote engagement in sustainability among young students. This is particularly important in relation to the citizen social science project at Københavns åbne gymnasium, and how students, through innovating upon their concerns towards climate change, can emancipate the youth to act upon their societal challenges. Through its design tools and techniques, participatory design can provide a space for experimentation where the students can reflect and enact choices in a playful manner. Participatory design processes can therefore offer opportunities for peer interaction in which students can explore diverse identities and elaborate on possible futures. In doing so, it embraces a classroom environment in which students can articulate their values and reflect upon potential designs for innovation. Participatory design, therefore, opens the opportunity for students to develop a structured reflection and critical consciousness, that can improve their ability to understand and contribute to transforming their life context in which they can exercise skills for positive intervention (Mouchrek, 2017). Combined with discussion on sustainability, the impact of participatory design and its learning process is only expanded, allowing students to articulate and discuss their value to address potential strategies for innovation (Mouchrek, 2017).

3.2 Theoretical perspective

In this next section, I will introduce my theoretical standpoint used in this thesis. I adopt Andrew Feenbergs Critical theory of technology (CTT) as a theoretical framework for understanding the innovation process within the CSS project at københavns åbne gymnasium and how it's the students

3.2.1 Critical theory of technology

As mentioned in the beginning of this thesis, youth are often excluded from decision-making processes regarding sustainable development. Based on this notion, there is a pressing need for a more democratizing process in which those excluded from the technical design processes do not suffer the consequently. This is something that Andrew Feenberg offers in his Critical Theory of Technology.

Andrew Feenberg's Critical Theory of Technology is a scientific theory within the field of technology philosophy concerned with modern society's technocratic systems and their threat to human agency. It is derived from the earlier Frankfurter Scholars' critical theory and its critique of modernity. The Frankfurt Scholars was a group of social scientists and philosophers that developed a common theoretical framework on the relationship between capitalist economics, psychology, and culture at the beginning of the thirties. Strongly inspired by Marxism and psychoanalysis, they worked towards the objective of creating an interdisciplinary scholar between different scientific disciplines, that took a distant and critical view on democratic socialism and communist labour movements. The most prominent figures were Horkheimer, who gave the early Frankfurt School its reputation, the philosopher and sociologist Theodor W. Adorno, the literary critic and philosopher Walter Benjamin, the philosopher Herbert Marcuse and philosopher and sociologist Jürgen Habermas. Even though they work under the same objectives, they each represent an individual view on critical theory (Ramsay, 2013). Early critical theorists such as Herbert Marcuse, Theodor Adorno, and Max Horkheimer argued that we live in a technocratic society with a culture that has been colonized by technical rationality, leading to adaptation and atomization of technology and thereby, loss of personal autonomy (Feenberg & Fraser 2017). Technical rationality is thereby described as the state where the pervasive prevalence of technology makes impossible notions of an alternative society or ways of thinking rational (Delanty and Harris 2021). Technology is thereby presented as a means for social control, which can only be transformed from "outside" the system because those within the society are too constrained to act. Therefore, the best opportunity for an alternative society lies within the excluded, in which they, through critical rationality, can act against the technocratic society and thereby create a technical liberation (Veak, 2006). Thereby is, the focus not on the technology itself, but on the technocratic society that we live in. However, these concerns of technology were not carried on by later theorists of critical theory. The later critical theorist, Jürgen Habermas, argued how technology only is an element of technical control of nature, and, therefore, neutral when it is limited to that domain. He does, however, admit that the technological rationalization of society is problematic, but technology itself is not the cause. Instead, he claims that the source of the problems is due to the tension between the work and communication spheres within a society (Veak 2006). What Habermas instead are advocating for is communicative action. Habermas, therefore, sees technology as a non-social instrument that exists outside the domain of

the life world, because of its exclusion from communicative action that is socially embedded (Delanty and Harris 2021). However, it is difficult to avoid the question of technology and the effect it has on society today, as social life is thoroughly entangled with technological processes. Technology has all sorts of social implications, but even though the early theorist of critical theory raised the critique of technology, they did not offer enough insight into how technocratic power can be resisted and mobilized by citizens affected by technocratic society (Delanty and Harris 2021). Critical theory must engage more directly with the question of technology by addressing how modern technology can be recontextualized to adapt to the needs of society and, thereby a freer society that is not underlined by technocratic control. This is something that Andrew Feenberg addressed through his critical theory of technology.

Andrew Feenberg combines the insights from both Marcuse and Habermas view on critical theory in this critical theory of technology. He agrees with Marcuse's view upon how technology is socially shaped and that its form is a political choice. However, he rejects his notion of how it is either a technique of domination or a technique of liberation, claiming that the goal is not to destroy the system, but to alter its direction of development through technological politics (Veak, 2006). This is where Feenberg draws upon Habermas and his view on a democratic community, suggesting *democratic rationality* to liberate technological design choices from hegemonic constraints (Veak 2006). Thus, Feenberg view technology as inherent in the socio-political environment, where technological design has become an ontological decision, filled with political consequences. Technology thereby becomes a principal form of power in society, in which privileged actors possesses the hegemonic control of the design process, and those not included are the ones that eventually suffer the consequences of technology (Feenberg, 2005). Andrew Feenberg defined technology in terms of "*larger system, a lifestyle, a collection of social values, meanings, and culture cues, some of which become inscribed in technologies design*" (Grimes and Feenberg 2013, 3). This definition, therefore, claims that technology is embedded in different social elements, to such an extent that these shape the technical design. Feenberg goes further and explain how society, therefore, is able to concretize its power through technologically mediated organizations. By doing so, society prevents citizens from meaningful socio-political participation (Veak, 2006). However, Feenberg believes that democratic rationalization can help overthrow the prevailing power by

stating that people must act from within a system to actualize the power. In doing so, he provides a theory in which oppressed or excluded citizens can recontextualize technology in order to include their perspective. This is particularly relevant regarding the youth's unequal power to influence sustainable development in urban societies in which they are often excluded because of the perception of them being apolitical and too unmatured to participate in social, economic, and political processes.

3.2.2 Instrumentalization theory

As part of Andrew Feenberg's critique of technology, as well as his aim for democratic rationalization, Feenberg argues how technology must be analyzed at two levels *"a primary level at which natural objects and people are decontextualized to identify affordances, complemented by a secondary level of recontextualization in natural, technical and social environments"* (Feenberg 2005, 47). The first level seeks to identify the affordances embedded within the technological object. Affordances refer to the core values or intentions implemented by the designer of the technological object, as well as the technical elements as the functionalities of the technological object. By identifying affordances, the primary level, therefore, aims towards decontextualizing technology and reducing it to its useful properties. This happens through a process Feenberg refers to as de-worlding, in which technological objects are torn out from their original context to be analyzed and manipulated, while an acting subject is positioned for distance control (Feenberg, 2005). At the secondary level, the overall aim is to realize the designs by integrating it with existing devices or systems. Through the introduction of designs, the secondary level thereby seeks to recontextualize and integrate the simplified technological object to a natural and social designs into existing devices or systems, together with various of social constraints such as aesthetic and ethical (Feenberg 2005). By doing so, acting subjects can re-instill core values in which aesthetic and ethical principles can be added to the technological object. On such note, the primary level of instrumentalization should be viewed as a process where different elements of affordances are reduced and simplified, so they can be implemented into existing devices or systems, while the secondary level of instrumentalization aim towards simplifying the affordances to a natural and social environment, creating a process of realization in which the original functionality can be oriented towards a new world (Feenberg 2005).

3.3 The qualitative methods

In this section, I will introduce my ethnographic fieldwork and clarify the methodological standing points I have made throughout my fieldwork, and how my role as a co-researcher has significantly impacted my method choices and reflection throughout my fieldwork. In doing so, I aim towards creating an understanding of how my fieldwork and role as a co-researcher in YouCount have evolved throughout the process.

3.3.1 Fieldwork at Københavns åben gymnasium

My empirical evidence is built upon the ethnographic fieldwork I conducted at Københavns åben gymnasium in which I helped facilitate the CSS project we had designed through an interdisciplinary process. The fieldwork was conducted through 17 teaching modules in nature-geography, in which 17 students combined by two different classes participated as youth citizen social scientists. The CSS project was conducted through participatory observations and follow-up interviews.

Kommenterede [NPMR1]: ersat alle citizen social science project med CSS projekt

3.3.2 Participatory observations

The main part of my empirical material was generated through participatory observations conducted throughout my fieldwork at Københavns åben gymnasium. Through my position as a co-researcher in GenSkab I participated in facilitating the citizen social science project at Københavns åben gymnasium. Doing so, I was able to participate in the daily life of the nature-geography class, where I experienced, observed, and systematically registered the social life on its own terms (Tjørnhøj-Thomsen & Whyte 2007). Through observing, listening, and asking questions, I was able to gain a sense of the structure of the setting and began to understand the participants practice, giving me an embodied knowledge of the daily routines, teaching environment, and the psychical space (Hammersley, 2007a). Doing so gave me an insight into the unspoken and tacit knowledge that have a significant impact on the daily life of the nature-geography class. Thus, enabling a process in which we could adjust and design the citizen social science project, something we experienced regarding how a much time was spent on the pedagogical aspect of teaching, which meant we often did not have the time available, as first assumed. Because of my position as a co-researcher within Genskab, in which I was able to generate my empirical material, I was constantly

Kommenterede [NPMR2]: bemærk to forskellige tekstererisopil fra H 2007

reflective and self-conscious of the methodological choices I made throughout my fieldwork. Something I will elaborate on in relation to methodological choices that I am going to clarify throughout this chapter.

3.3.2.1 My different roles in participating

Doing fieldwork in a school setting sometimes means that one must adopt the role of a teacher. This was something I experienced myself, however, when conducting action research, one often experiences how roles unexpectedly shift as the action research process unfolds and change itself in relation to context. This called upon a display of various set of roles, skills, and dispositions throughout the citizen social science project that provided different responsibilities and relationships (Aragón & Brydon-Miller, 2018). Throughout the beginning of the citizen social science project, my focus was on coming to know the students and Louise in order to establish a relationship, as well as generating an understanding of the teaching environment to adapt the life and routines of a school setting. Embracing the roles of an observer and listener gave me insight into the different concerns and challenges the youth articulated towards climate change and sustainable urbanism in relation to the educational material in focus during the first two modules. My knowledge about the geographical and environmental challenges as well as the sustainable transition, was not at the same level of expertise as Louise and Cathrine, so it was only natural for me to step into the background and instead focus on gathering information, understanding, and building relationships. It was first, when we started to work more explicitly on South Harbour as a case area that my role expanded to include the ones of a facilitator, researcher, and teacher. Throughout this stage, I contributed with facilitating various exercises we had prepared for the students, as well as training them in conducting ethnography fieldwork, forming a research design, and analyzing and thematizing their empirical data. This also included finding relevant reading material that suited the students' competencies and developing an education strategy for the modules. It was through these roles that I was able to interact more deeply with the students and conduct informal conversations that provided insight into the learning process the students experienced. In particular, the role of the teacher unfolded different perspectives related to the educational environment and came with a responsibility where students started negotiating whether they could get an early day or doing the class outside. The different roles I encountered

throughout my fieldwork played a significant role in relation to my empirical data, in which I was able to create different insights into the process of the citizen social science project as well as the students' thoughts and reflections upon their experience as youth citizen social scientist and the knowledge they gained.

3.3.2.2 Field relations

My critical participatory action research approach emphasizes an equal research collaboration with participants, in which the common perception of the subject/object relation between researcher and research object is rejected. This has played a significant impact on how I have positioned myself as a researcher and formed relations in the field. Thus, has it been essential for me to enter the field with a casual appearance, especially regarding how the position an ethnographer seek to maintain can be shaped by one's physical appearance (Hammersley, 2007a). It was thereby important for me that both my psychical as well as psychological appearance distance itself from the position of researcher whom purpose was to view the students as research objects in order to find a neutral ground where mundane conversations could take place. Additionally, did my own situation as a youth have an impact on the relationships I formed with the students throughout the process. In the beginning, a few students addressed how we as researchers, as well as Louise, participated in the research process as part of ours jobs, however, when I commented on the fact that I was there as a student to learn and did not receive any compensation for participating, I experienced how I was able to connect with the students through my own personal situation as a young student receiving SU (Educational support).

Likewise, I created a close relationship with a few students when their realized we were from the same neighborhood, in which we bonded over a playing ground that I visited daily with my kids and the student himself grew up playing at, as well as another student who almost was my neighbor. These students were also the ones that later on would reply when I contacted them. Thus, embracing the value sociability play in relation to building trust within the field and thereby creating access to respondents (Hammersley, 2007a).

3.3.3 Informal interviews/groups discussion

Conducting participatory observations also includes engaging in spontaneous and informal conversations with participants. Often occurring within a very short period of time, on a one-to-one basis with a student or together with a research team, I was able to engage in conversations aiming towards forming my understanding of the field, as well as gaining an understanding of the participant's perspectives and reflections about their own research process. Therefore, has informal interviews been a significant part of my empirical generation in which I was able to ask questions curiously and spontaneously during my participant observations. Additionally, it has been essential for me to create an atmosphere and dynamic in which the students did not feel like a research object being studied. Thus, I have engaged in more common topics of conversation to establish my identity as a 'normal' individual. Constantly asking about matters relative to research interests can seem threatening for participants, contributing to a further division between the researcher and participants (Hammersley 2007a). This has especially been necessary due to the ambition to burst the power relations that can occur within conventional scientific research, which critical participatory action research rejects. In addition, the more common topics of conversation did not always divorce itself from my research interests, as it in some cases contributed to providing additional and unforeseen insight on participants and their everyday life (Hammersley 2007a). An essential quality criterion for me when conducting informal interviews has been on valuing the sincerity and intimacy nature of a conversation. Thus, I focused on being present and engaging, which meant that I did not record or took fieldnotes when conducting informal interviews with the students. Instead, is the empirical insight I created through informal interviews dependent on the field notes I took throughout the process. However, key perspectives and observations may have been lost due to the lack of tangible empirical material and my own ability to remember all details.

3.3.3.1 Fieldnotes and pictures

Throughout the citizen social science project have I collected my empirical material through fieldnotes and pictures. Often did I write down my field notes when Cathrine or Louise was teaching or facilitating an excise, leaving time for me to observe, and gathering information and perspective about the situation or what I had experienced early on during the module. In particular, I was aware

of my own action and how it was not too conspicuous for the students, in order to maintain a relation in which the students did not feel threatened by my presence. Continuously throughout the process, have I rewritten my fieldnotes into stories while the experiences were still fresh in my memory. This has involved making my notes legible in which my experiences and key points were made explicit for the reader. Additionally, has my fieldnotes and experiences within the field been supported by Cathine's own work of fieldnotes, especially in relation to episodes or situations in which I did not have the opportunity to take notes on the statements the students made.

My use of pictures throughout the citizen social science project has been used to document the students' work throughout the process, especially in relation to the different exercises and assignments they worked on. The majority of the work conducted was done through analogical elements, as we found out how this led to a more collaborative and inclusive process in the research teams. However, this also meant that it was essential for us to document their work through pictures because of the risk of the students' losing their work. Furthermore, I took pictures of the everyday life throughout the citizen social science project, in order to support experiences or arguments later on in my thesis, as well as an anchor to help me remember what I have observed during my fieldwork. Doing so helped me relive the experiences in which feelings, thoughts or epiphany emerged in continuation of rewritten fieldnotes.

3.3.3.2 Semi-structured interviews

As mentioned above, I have conducted informal interviews with the students during the course, however, this also had its disadvantages in relation to how key perspectives and information easily could be lost, due to the lack of tangible empirical evidence to go back to. Therefore, I found it essential to conduct two semi-structured interviews with students about their experiences and innovations within the project, and one semi-structured interview with Louise about her experiences as a teacher throughout the process.

Conducting semi-structured interviews helped maintain a continuous interaction in which the respondents were able to contribute with the perspectives and experiences they felt most relevant to address without me losing the scientific objectives that I had set (Brinkmann & Tanggaard, 2015).

By generating central focus-questions, I made room for the interview to have a focal point, but without being firmly bound by it. This created a space for follow-up questions to elaborate on specific perspective or situations and contributed to making the interview a more fluid process in which interviews question did not need to be strictly followed, but still guided me in maintaining a red thread. This was essential in relation to creating an insight and understanding of what the students and Louise valued as significant perspectives compared to their experiences within the citizen social science project and the innovations the students had worked on. Although I did not follow my interview guide stringently and had to push prefabricated questions aside, the respondents touched the different themes I had prepared to address during the interview situation.

The conducted interviews were my primary method for collecting empirical evidence in the form of perspectives and discursive explanations. It was through my interviews that I was able to generate empirical evidence that otherwise would have been difficult to obtain through participant observations. Additionally, I considered the combination of participant observation and interviews as a methodological approach that could be used to illuminate the other. However, it is important to address the effect participant observations can have on how one interprets what is being told in an interview, as well as how what people tell can make you see things differently in observations (Hammersley, 2007b). Therefore, it has been important for me to have this in mind when conducting interviews with students after the citizen social science project ended.

3.3.3.3 Interview guide

I developed two different interview guides, one for the students and one for the teacher Louise. I structured the guides into research questions and sub-questions. The overall theme of the interview was to create an understanding of the experiences of participating in GenSkab, both from a student's and a teacher's perspective. For the interview with the students, I wanted to focus more on the innovation they developed to create an insight into the different social norms and values the students had implemented in their technical design. This aimed to create an insight into how they had thought of themselves and the challenges they experienced as young people and in relation to the environment in their innovations. The teachers interviewguide was constructed with an aim for creating an understanding of how Louise experienced the citizen social science project, both in

relation to the collaboration between Aalborg university as well as the decision to let her student participate in a citizen social science program. It was essential for me to hear her reflection about the citizen social project in order to create an understanding of what she had learned as a teacher participating in research together with her student, as well as how a future project could be implemented and conducted on københavnns åbne gymnasium.

3.3.3.4 Respondents

As mentioned above I conducted two interviews with two students as well as one with the teacher Louise. I was aware of maintaining the leeway to choose people for interviewing, especially in relation to engaging in a strategic search for empirical data which is crucial for a reflexive approach (Hammersley, 2007b). However, it turned out to be a quite complex process to gain access to respondents that wanted to be interviewed. Originally was my aim to interview students from different research teams in order to create an insight and understanding into the different innovations developed throughout the process. I knew that it was going to be a difficult process, especially considering how the students soon were graduating, and they thereby had other things on their minds than participating in being interviewed. I also experienced this in relation to Cathrine's attempt to organize a workshop with the students to plan the festival where their innovations and work throughout the process were being presented. I thereby ended up targeting the students that I knew might be more willing to participate. Johanne and Frederik both worked together in the same research teams, and I am therefore aware of how the interviews I conducted represent the experiences and perspectives of a single research teams. However, they are still two individuals with different understandings and perspectives on the process, which can enlighten how they have participated within the process.

3.3.3.5 Documents and students' assignment

Throughout the citizen social science project, the students at Københavnns åbne gymnasium produced various working documents in relation to the different assignments and design technics they were introduced to. Throughout the process, we show great potential for introducing more analogical assignments and material because of how it opened up a more collaborative process in

which the students engage in open and equal dialogue. However, most of the documents and materials are gone, due to the fact, that we lost them throughout the process. Some were thrown out at the end of the citizen social science project as part of cleaning the supply room where it was kept because of the end of the school year, and others were simply lost or forgotten by students. I am, therefore, aware of the empirical loss in which essential insights and knowledge have vanished. Some are documented through photos taken when realizing how some of the material disappeared. Additionally, the student bund to deliver two written rapports related to the citizen social science project in order to comply with the educational requirements and goals in nature-geography. However, not all written rapports were turned in or only consisted of a few phases.

4 Analysis

The foundation of the analysis is structured through three phases, *youth's perspective on sustainable development and participation, sustainable innovations, and social change and action*. The aim is first to give a critical overview of the youth's perspective on sustainable development and youth participation, secondly, a visionary of the students' perspectives for a more sustainable Sydhavn, and lastly, the students' experiences in participating in the CSS project.

I will start off by presenting the youth's perspective on sustainable development and participation to create an understanding of how they find their practice undemocratic and unjust. The first part of the analysis thereby evolved around the youth's critical understanding of sustainability, in which I will draw upon material generated throughout the first haft of the CSS project. The aim is to decontextualize sustainable development to identify its core values, how it influences society, and what consequences emerge when implementing different sustainable initiatives. This part of the analysis does not evolve around the five research teams as different entities but instead tries to understand the different individual perspectives and challenges youth faces. Second, I will present the student's sustainable innovations and how they have recontextualized sustainable development based on their own perspective. This part of the analysis will be based on the five innovations made by the students through the CSS project. The aim is the create an understanding of how the youths include their different values and intentions within their innovations. Lastly, the fourth phase will present the aftermath of the citizen social science project at Københavns åbne gymnasium. Here I

will present my interviews conducted with two students and the teacher Louise, as well as the youth's perspective generated throughout an evaluation game. I will therefore analyze the student's perspective on participating as youth citizen social scientists and their empowerment processes.

4.1 Youths' perspective on sustainable development and youth participation

In this first chapter of the analysis, I will create an insight into the youth's perspective on sustainable development and youth participation. This is done to create an understanding of the youth's different concerns and interests toward climate change and their experiences of participating in society. By doing so, I am towards creating an understanding of the different challenges the youth might experience in relation to citizenship.

4.1.1 The youths' perspective on sustainable development

Doing the first lecture, we introduced the students to a google time-lapse video that showed the urbanization of different cities across the globe. The aim was to visually show students the population growth during the last forty years and how it has affected the expansion of cities.

A student commented on how the video showed how green areas have disappeared in favor of new residential areas. *"It is important to have green spaces for the human psyche. We need it so that we can get away from the hustle and bustle of the city"*. The conversation continues with the impact that COVID-19 had on the significant attention given to the importance of having access to green spaces in urban areas. *"Fælledparken was the only green space you could go"* a student mentioned. *"There are more bottle tops than trees there"* another one joked. (Fieldnotes module 1)

The importance of having access to green spaces was something that most of the students felt was necessary when living in an urban area. It was something that many used on a weekly basis, especially under corona when there was nowhere else to go. However, they saw a lack of green spaces in relation to the only place you really could go to in Copenhagen was Fælledparken, one of the largest green spaces available in Copenhagen. This was also seen in connection with an exercise

we did in the second lecture about what activities the student saw as most important in relation to sustainable development (see appendix 2), in which a group of students talked about the importance of implementing more green spaces instead of residential areas (fieldnotes modul 2). These aspects create an understanding of how the students view green spaces as having a significant impact in relation to creating a more sustainable environment but also the effect it has on the well-being and life quality of citizens. However, as the population growth and cities become bigger, new residential areas become a priority in which green spaces disappear or decrease.

Another perspective that was articulated by some of the students was the opportunity for recycling, both in relation to waste sorting, repair options for electronics, buying goods, and donations to vulnerable citizens. Better options for waste sorting were seen as an element that could benefit and foster a more sustainable living in which it could be *“easier to be a sustainable citizen”* (fieldnotes modul 2). Therefore, it was considered essential that one's surroundings also offer one the opportunity to live as a sustainable citizen. The core value and intention of sustainable development makes it hard for the youth to sustain a sustainable life because of its missing alternatives. Therefore, there exists a wish for alternative options in order to easier practice the role of a sustainable citizen. This also aligns with the student's view on recycling and repairing electric goods, in which many saw the need for better alternatives, as there still lacks more sustainable options for electronics and buying used goods. However, even though recycling was a key priority and issue that most of the students saw as an important aspect of creating a more sustainable living in an urban setting, not all students agreed on that matter. A student commented how *“when things don't work out, we just throw it out, even if it's sustainable”* (Fieldnotes modul 2).

The beginning of the citizen social science project also introduced the student to different concepts and methods used in sustainable development. Here the students were presented with the different concepts of *Circular Economy*, *Brundtland Elements of Sustainability*, *Planetary Boundaries*, and *The UN's Sustainable Development Goals*. This was to create a common basis for the methods used when developing sustainable initiatives and political goals for a more viable and sustainable future. This led to an open dialogue within the different research teams about what sustainability is and how it is achieved in relation to the different concepts.

I approached a research team that was talking about the concept of circular economy. The team had not heard about the concept before, which led to a conversation about recycling. I asked a student what she does with her phone when she buys a new one, *"I either throw it away or sell it"*. This led to a conversation about the model of circular economy in which the goal is to extend the lifetime of products through practices of recycling, reusing, reselling, repairing, upcycling, etc., *"It's a bit of a desirable scenario"* she commented (Fieldnotes module 2)

Although the student stated that she only resells her used phones in some scenarios, she still saw how a society built around the model of circular economy would be a desirable scenario for achieving a sustainable future. Additionally, when we started talking about what sustainability meant, a student mentioned that it is important to secure future generations when developing sustainable solutions (Fieldnotes module 2). She continues and articulates that sustainable development should not negatively affect future generations. Through this perspective, the student thus emphasizes the social dimension of sustainable development in relation to the concept of intergenerational equity. Sustainable development should, therefore, not only focus on creating better living conditions for the present generation but also take the future generation into account. In connection to this matter, we started to talk about how this was seen in relation to flood protection, which is developed to secure both the present and future generations from the impact of extreme precipitation events (Fieldnotes module 2).

4.1.2 The youths' perspective on youth participation

Doing a lecture that took place in the middle of the citizen social science project, we wanted to investigate the students' perspective on youth participation and what it meant for them to be part of a community. The aim was to create an understanding of how the student participates in society and what they see as an important aspect of being part of a community. The lecture started off with me showing the students a short video about the concept of community building. In doing so, we wanted to present the students with an understanding of how one could collectively enhance a community through a common interest or need. Afterward, we reflected together on the meaning of being part of a community in which different advantages and disadvantages emerged. Among other things, the students considered a community as a place that created safety and strength

through the togetherness that existed in being part of a social group. Additionally, a good community is a place with a common interest and mutual opinions in which participants can collectively act together on different needs or interests within a social group. Although this is the case, a student articulated how peer pressure could emerge within a community. Being part of a community does not always have a positive impact but can also make you go against your own principles in order to feel accepted or valued by others. Therefore, it could be particularly hard to act against the norms and beliefs within a community and thereby challenges the established opinions (fieldnotes modul 11). This was also seen in connection with the students' view on participation, in which they describe it as hard to challenge the established practice and system. We talked about the pressure youth felt in relation to participating in different social, economic, and political arenas offered by society and how it was difficult to navigate as it lacked the representation of youth. A student addressed how he often felt like the elder generation acted as more knowledgeable than the youth and, therefore, often looked down on them because of their age. He saw society as dominated by strong conservative opinions that he felt were hard to challenge and act against. He added how the youth could contribute with new ideas and opinions that were needed for society to develop and become more open-minded. However, he felt little room was given to the youth to participate and express their opinions. Another student addressed the reason why he thought society was dominated by the elder generations' views and opinions. For him, it was only natural as young people often had difficulties in finding the time and energy to participate and engage in society (fieldnotes modul 11).

Community	Youth participation
Creates security, togetherness, and strength.	The elder think they know more, which makes it difficult to act.
A good community is when you do something together and have mutual opinions.	Do not have time to participate.
Peer pressure.	Society is dominated by conservative thinking, and thereby not open-minded.
Difficult to change and challenges established opinions.	Difficult to break through.
	Youth have a big responsibility towards climate change.
	Youth are worried about the future but cannot change much because people do not listen.

Figure 1 - The student's perspective on community and youth participation

Additionally, when it came to climate change and sustainability, a student articulated how she felt a great responsibility was placed on the youths' shoulders, but it was hard to act upon and change the current practice and system because of how youth was viewed in society. She felt that young people's opinions were taken for granted even though they were the ones who were going to live with the consequences of climate change. However, on the same note, she felt that most young people find it difficult to act towards a more sustainable future and demand climate action because of how far away we live from the present consequences of climate change.

4.1.3 Sub conclusion

There were several perspectives on different sustainable solutions that the students' desired in relation to sustainable development. Especially two areas were essential in relation to the youths' perspective on sustainable development: The need for green spaces and better opportunities for circular activities such as recycling, repairing, and waste sorting. The lack of green spaces was a common topic that a lot of students brought up, especially in relation to how they often felt that the need for green spaces often was deprioritized in favor of new housing construction projects.

This perspective opens up for one of the current core values within the practice of sustainable development in which the students feel that the need for green spaces is being neglected. Furthermore, the effect green spaces have on the human psyche was something a student articulated as an important aspect when it came to sustainable development. It was therefore important for him to have green areas, as it provided an opportunity for citizens to get away from *“the hustle and bustle of the city”*. This tells something about the social dimension within sustainable development, especially in relation to the effect technology has on the well-being and life quality of citizens. The opportunities for circular activities such as recycling, repairing, and waste sorting were mentioned in relation to waste sorting, repair options for electronics, buying goods, and donations to vulnerable citizens. Here was especially the need for better waste sorting options seen as essential and as an element that could foster a more sustainable living in relation to how it would be *“easier to be a sustainable citizen”*. Did is not something that the current practice of sustainable development fosters in a way that is meaningful for the youth. Expressing these needs decontextualized sustainable development and opened up the current core values in which there is a need for creating initiatives that makes it easier to be a sustainable citizen. However, even though most students saw the need for better alternatives in relation to circular solutions, not all students agreed on that matter. However, even though the students expressed different interests and concerns in relation to sustainable development, it was hard to act upon and change the current practice and system because of how youth was viewed in society. A student expressed how she often felt that her opinions on climate change were taken for granted. This aligns with how most of the students felt in relation to participation, in which they describe the difficulties in challenging the established practice. Additionally, did, they find it hard to navigate the participation arenas offered by society as most of them lack the representations of youth.

4.2 Sustainable innovation

The following section will present the five research teams' sustainable innovations. This part will include empirical material generated through the design game as well as the assignments the students conducted during the game. In addition, I will draw from the second written assignments (see appendix 3) the students were given by the end of the Y-CSS project. Although not all research

teams have submitted the written assignment, I will try to describe their innovations from the informal interviews and observations I have conducted throughout the process.

4.2.1 Research team 1:

Research team one developed a fishing and sailing education with the aim of providing with an alternative to the BY&HAVN's sustainable housing project planned to be implemented in the green space, stejlepladsen, located near Fiskerhavnen. Fiskerhaven is a small harbor located in Sydhavn that is known for its population of marginalized citizens that experiences different societal challenges. The area has a big cultural and historical meaning for the citizens of Sydhavn, that they fear will disappear because of BY&HAVN's sustainable housing project.

"The reason we have chosen education as our innovation is that it attracts the new generation. Young people are Denmark's future. By starting education in Fiskerhaven, the new generation will have the opportunity to take another path(..) Fiskerhavnen will teach the new generation about the working-class neighborhood and its values, and the odd existences will now not only arise among the older and experienced but in the youth environment" (Appendix 4)

Their innovations imply the need for taken the local area and its surroundings into account when developing sustainable initiatives. They continue to explain how their educational program could give a new perspective on sustainability, especially regarding how it appears BY&HAVN has underestimated the qualities of Fiskerhavnen (Appendix 4). The research team recontextualizes sustainable development through their innovation, in which they emphasize the possibilities of drawing on existing resources within Fiskerhavnen, to create sustainable solutions that take its social context into account. Therefore, is the development of sustainable initiatives in relation to its social context a core value for research team. This was also seen in relation to a conversation I had with one of the research members.

A student approached me to hear what I thought about their innovation. She told me how she considered it to be a good opportunity to create unity between the local fishermen and those who used the facilities in Fiskerhaven, in relation to passing on the skills and knowledge they have about the area to new residents. Among other things, she emphasized how local citizens from Fiskehaven wanted to create a greater

interest in the area and its possibilities, and that was why they decided to innovate a fishing and sailing education. (Fieldnotes 12+13)

It was not only essential for them to take Fiskerhavnens' social context into account, but also the perspective of residents who lived and came to the area. This can be seen as a response to the political practice of BY&HAVN that have left little room for the citizen of Fiskerhavnen to act upon the perspective of creating a more attractive and sustainable area.

4.2.2 Research team 2:

Research team two wanted to develop a green community in Sluseholmen, located in the new part of Sydhavn. Most of the buildings in the area are relatively new and are located near the city canal. Unlike the old part of Sydhavn, most of the citizens living in Sluseholmen are families with a good income. However, most of the building in the area is constructed with concrete, which has one of the highest carbon footprints in relation to building materials. They thereby focus on how it can be difficult to maintain a sustainable focus and, therefore, aim toward creating better conditions for sustainability in the new quarter in Sydhavn. The green community could either be implemented through green roof terraces, herb gardens, greenhouses, and plants along buildings. The aim was to create better conditions for sustainability in the new quarter in Sydhavn.

Throughout the presentation, they emphasize the fact that there must be different requirements to participate, e.g., you must apply for membership and possess different duties that need to be fulfilled. Rules that could be set up by the different housing associations in the area. Louise asks what would happen if she, as a resident, didn't help or just forgot to water the tomatoes. "*Then you should get your head into the game*" the student replies. She adds that we particularly need these demands if we want to change the way we live and do something good for the earth. Especially in relation to the fact that we don't have enough time to wait for people to act on it. (Fieldnotes 12+13)

Through implementing different rules about how to participate and who can participate, the research team aims toward creating a community that takes the need for creating sustainability at a policy level. Their core values are thereby embedded in law and politics that shall ensure the sustainable transition and climate action because of the urgency for responding to the different

challenges there exist toward climate change. Thereby they view the implementation of rules as a means for getting people to act on the sustainable agenda.

4.2.3 Research team 3:

Research team three wanted to create a cohesive community within Sydhavn through a garbage collection event at Sydhavns Tippen. Tippen is the largest green space in Copenhagen located in Sydhavn, that is used by many of the citizens in Sydhavn. Therefore, research teams three saw a great potential for using a frequently visited area as means for creating togetherness and inspiring new acquaintances. Their aim was to reduce the segregation between the new part of Sydhavn and the old part to create a more cohesive Sydhavn.

"The dream is that different participants from different classes, cultures and residential areas will be able to create bonds and see that they are not as different as you might think" (See appendix 5).

They saw the potential for bringing together different classes, cultures, and residential areas through their innovation. They thereby recontextualize sustainable development to create a more inclusive society. This is also seen in relation to how their innovation was not only built upon a garbage event, but also included other aspects that could draw the attention for potential participants.

"Our project is a garbage collection event combined with a cozy communal meal filled with party, games, fun, coziness, and delicious food. (...) In order to attract more participants, especially the competitive ones, the entire event will be a competition. When the garbage collection is over, the rubbish will therefore be weighed, and the group that has collected the most garbage will win a prize" (See appendix 5).

The different elements implemented in their innovation have the intention of attracting participants in which they both could benefit the environment by collecting trash around Tippen but also strengthen the community bound within Sydhavn that have been particularly hit hard by the segregation within the area. Therefore, through recontextualizing sustainable development, the research team implemented a core value that embraces the different sustainable activities and events, as a means for creating a more inclusive Sydhavn.

4.2.4 Research team 4:

Research team four innovated upon creating a festival in Sydhavn, evolved around flea markets, football tournament and discussion café. By doing so, they aimed toward creating a festival that could embrace and gather the citizens of Sydhavn through a sustainable agenda.

The research team argues how a flea market is the most sustainable thing you can do, as it both creates a community, is environmentally good, and has economic value. They add, among other things, that in addition to holding a football tournament at the end of the flea market, they also wanted to hold discussion cafes where people could meet and talk about the problems they experience. There is a lot of discussion in the class about whether people want football, but the research team argues how football always has created a large community and how it interests people, not only in relation to playing it, but also the atmosphere it provides. (Fieldnotes module 14+15).

The research team aimed towards implementing different core values within the design, in they both draw upon the sustainable intention of implementing a flea market, but also the socially aspect of gathering people through football. Additionally, the debate café add a democratic value, in which the possibility for engaging and participating in different debates is possible. In doing so, their innovation aims towards being both inclusive and sustainable through including people through public debates and football, as maintain a circular economic potential for exchanging and buying used goods in the flea marked.

4.2.5 Research team 5:

Research team five develop a solution for creating a more sustainable Slusenholmen. Throughout the process, they showed an interest in investigating how to make the lock island more sustainable. This either with an innovation that was based on a green community where young people had the opportunity to come and "hang out"

"I sit down next to student who is along for the day. We started talking about the different ideas she had in relation to create a sustainable innovation. She asked me was what meant by by the scaling task, in which we started to talk about various examples of how one could implement a green community. She mentions that, for

example, it could also just be an urban garden with a space for young people to "hang out" and enjoy the green surroundings. The wildest idea, we could think about, was implementing an entire forest on top of an apartment complex. We laugh a little at the idea, and she tells us how she wants to go ahead with the idea of developing a social environment through an urban garden" (Fieldnotes module 14+15).

Sustainable development should therefore be based upon its opportunity to create green spaces in order to improve the social environment for young people in an urban setting. In doing so, they describe the need for green surroundings in the context of a call for more youth spaces. Therefore, is one of the core values in relation to sustainable development it's the opportunity to create social spaces that benefit the well-being of youth. In doing so, their innovation embraces the social aspect within sustainable development.

4.2.6 Sub conclusion

The first research team emphasized the need to take the local environment into account when developing sustainable initiatives. It was, therefore, a core value within their innovation that the social context in which a sustainable initiative was to be implemented was built together with residents. The same aspect was seen in relation to another team that emphasized the need for developing sustainable solutions that create inclusive societies, in which the technology should not only sustain a technical goal but also be playful in a manner that engages people to participate. Additionally it was create social spaces that benefit the well-being of youth, as well as political dimension of sustainable development core values for some research teams.

4.3 Towards social change and action

This part of the analysis will deal with the process after the CSS project at Københavns åbne gymnasium, where I have interviewed two students and the teacher Louise, to create a picture of their experience of the process and the perspectives they may have taken with them. I will refer to the two students as Carl and Johanne. This part of the analysis will then take place in the PAR concept around empowerment and its possibility to create social change through action.

4.3.1 Innovating upon real and authentic problems

Louise was an essential part in relation to the Y-CSS in which she, through her role as a teacher, participated in designing and facilitating the Y-CSS project. In relation to the Y-CSS she commented on the students' learning processes in which she articulated what innovating upon socio-technical challenges might have contributed.

"I think they have actually learned quite a lot about the fact that the city is not completely coherence, and I think perhaps they have opened their eyes up to some of the various problems surrounding how the city is developed, and not only in Sydhavn, but I also think it's something they can see elsewhere, maybe, actually" – Louise

Working on real and authentic challenges on a local level gave the students insight into the complexity of urban development. Louise regarded this as a quality the students had acquired during the process. This was also something Frederik articulated during an evaluation game (see appendix 6) after the Y-CSS in which he expressed how he had started to look at cities with different eyes *"How did that division happen, why does it look like this?"* (Fieldnotes module 17). The same perspective was addressed by another student during the evaluation game in which she reflected upon her learning experience throughout the Y-CSS project.

"I think we've really gained a lot of experience during this project, and I think it's been quite exciting, like what we've gotten out of the working environment. I didn't know that Copenhagen had eradicated as much of the working class area as they had, so I think it is very cool that we have received the information that there are actually crooked existences and weird types in other places that also have an impact on society. And I also think it is very interesting to know that Istedgade and Vesterbro were once a working-class neighborhoods and have now also become.. yes" – Student doing the evaluation game (fieldwork module 17)

The student explained how she, during the Y-CSS project, gained insight into different perspectives on society and the issues regarding gentrification. As mentioned in chapter 2.1, using the local

environment as a learning arena positively affects students' learning outcomes, in which students can generate relevant knowledge based on their own experience. This was something Frederik experienced in relation to conducting fieldwork around Sydhavn. Frederik articulated how he always saw the area of Sluseholmen as one big concrete building that had nothing to offer. However, after visiting and conducting research within the area in relation to the Y-CSS project, he started to see Sluseholmen with new eyes.

"I think it was great to come out and talk to the man who managed the recycling station, and I also think just to see that there are actually some who really want to go along with the green transition and want to do something for the local community, it was very nice to actually see that it wasn't just work-stressed people who had a little too much money, but that it was also some who got involved in the local area. And it also made you somehow feel like you could somehow get involved and do something there" – Carl

As he states, he had a preconception that the area only consisted of men in suits. However, being confronted with the lived practice and community within Sluseholmen, changed his understanding of the area. Not only did it change his understanding of the area, but it also made him feel like he wanted to get involved in working toward a green transition *"somehow get involved and do something there"*. Working on real and authentic socio-technical challenges was also something Johanne articulated in relation to how she felt that what she was doing could, in the end, help somebody else. *"Here you know that you come up with something that you know could be a possibility and help someone"*. She continues and articulates how she felt her innovation was more appreciated because it related to real and authentic challenges *"the idea was valued in a way"* (Johanne Interview).

4.3.2 Empowerment

Another perspective that was mentioned was the student's knowledge development in relation to the innovation process. Here, Frederik mentioned how the innovation process made him realize his ability to actually create positive change.

“Before, it seemed very much like a big project if you had to do something for the local environment, it may have seemed a bit like something you couldn't do as a young person in general. It was something only adults could do, but I think after this project, it seems like it is quite easy to do. I think we could put this innovation on its feet without much difficulty if only we had the time” – Frederik

This perspective gives an insight into how Frederik has developed the ability to utilize his opportunities for change in relation to how he addressed the realization he had after the Y-CSS project, *“but I think after this project, it seems like it is quite easy to do”*. In saying so points towards the subjective dimension of empowerment He goes on and addresses how the process of getting involved in the local environment has not been something he considered possible as a young person. However, the Y-CSS project gave him an insight into what it takes to plan various initiatives that benefit the local environment and that if he only had the time for it, he could have implemented his innovation. He himself adds;

“I guess it has given some kind of confidence in that you can actually do something like this, like bigger projects, (...), which you actually can put together, and that I think is pretty cool that you can actually get this kind of confidence” – Frederik

With this, Frederik described how the Y-CSS project gave him confidence, paving the way for a subjective dimension of empowerment. However, even though this is the case, Frederik still emphasizes how it would be difficult for him to implement the innovation because of his lack of time *“I think we could put this innovation on its feet without much difficulty if only we had the time”*.

4.3.3 Sub conclusion

The Y-CSS project created a learning opportunity through its use of the local environment in which the students generated new knowledge of the complexity of sustainable development in a local context. Here did, the student gain different insight and perspectives into challenges that existed in local areas, such as the issues regarding gentrification. Additionally, conducting research in a local

environment with various actors creates an opportunity for getting inspired or motivated, as it was seen with Frederik, that felt he should involve himself because of how committed a local actor was to his sustainable initiative. Additionally, working with real and authentic problems create a feeling of being valued and appreciated because of how the student's innovations tap into real-life problems. Lastly, Frederik started to realize some of his potential in relation to the innovation process in which he saw how he became more confident in himself and his ability, thus, paving the way for social change and empowerment.

4.4 Limitation

There were several limitations throughout the Y-CSS process in which we inspired difficulties in involving all the students in the process. The process was long, complex and required that you show up for class as most of the work for the project took place in class. However, this was a challenge as many students often did not show up for class or were late. Although we worked towards including everyone in the process, it was difficult to maintain everyone's motivation. Furthermore, we experienced problems with knowledge being lost along the way, as much of the material the students were given ended up disappearing. In addition, not all students were interested in the project as they had no connection to the area.

5 Discussion

Throughout this chapter, I will discuss the following research questions: What are the youths' perceived challenges towards youth participation and sustainable development, and how can they be empowered to act upon them?

The youths experienced several challenges when it came to sustainable development and youth participation. Most students felt that the need for green spaces was being neglected in favor of new construction projects. This was also in relation to the controversy surrounding Fiskerhavnen, where BY&HAVN wants to build on a natural area in Sydhavn. Green areas were referred to as essential in relation to the well-being of citizens living in urban areas and considered a tool to get away from "the hustle and bustle of the city". Furthermore, several students requested the need for better

waste sorting options seen as essential and as an element that could foster a more sustainable living in relation to how it would be "*easier to be a sustainable citizen*". The different challenges serve to the complexity of the concept of sustainable development that often is normatively charged and, therefore, reflects the political position of the actors involved in the decision-making processes. This is particularly relevant when it comes to youth as they are often excluded from these processes as society does not view them as disengaged from civil action. Because of this, youth are often excluded or limited in forms of involvement. However, as the youth themselves described, it is difficult to challenge the established practice and system, as society is dominated by strong conservative opinions, leaving little room for the youth to articulate their opinions. This creates a reality where youth feel looked down on by the older generation because of their younger age. This aligns with how youth often is seen as citizens in the making instead of citizens with the right to inclusion and participation. Even if youth wanted to participate, they often felt it was difficult to navigate because of the lack of representative youth. Young people are therefore left without the ability to influence important decision-making processes regarding their life and future. Consequently, this only end up leading to the marginalization of young people's voices in political and social arenas, as well as youths' reluctance and skeptics towards policies facilitating youth participation. This, however, fosters the dominant discourse about youth participation deficit and youth dissatisfaction, despite the opposite being proven. It is, therefore, a complex practice that young people must navigate in relation to the lack of opportunity to act upon their concerns about climate change. The question is, thus, if the youth was able to overcome these challenges in relation to the Y-CSS project at Købehavns åben gymnasium?

Y-CSS's co-creative and participatory nature offers an opportunity for youth people to act upon their perceived challenges toward sustainable development and youth participation. As stated in 3.1.3, Y-CSS encourage action in response to the challenges that the participants encounter throughout their research. Combined with discussion on sustainability through participatory design methods, the Y-CSS was created as a means for students to articulate and discuss their value to address potential strategies for innovation. There is, therefore, create potential in the innovative method of Y-CSS, which also was something that I encountered throughout the fieldwork. The project provided the youth with knowledge about sustainability and urban development as well as introduced them

to different socio-technical challenges within a local setting. These aspects gave the students a new perspective on the impact technology has on society, as well as the need for a more inclusive way of conducting decision-making processes. This was seen in relation to some of the research team's core values on sustainable development that they recontextualized within their innovations, in which a team called upon the need for building sustainable solutions together with residents. In relation to empowerment, one may argue that the students improve their capacity to create, manage, and control various material, social, cultural, and symbolic resources, even though none of them ended up implementing their innovations. Instead, the real and authentic nature of the project offered, in which students met local actors and innovated upon real-life socio-technical challenges, creating a space that tapped into possibilities for empowerment. However, it still had its limitation as mentioned above.

6 Conclusion

The youth experiences various challenges in relation to sustainable development and youth participation. Here youth articulate different sustainable solutions, such as green spaces and circular economic, as initiatives that are lacking in their everyday life. Additionally, young people are left without the ability to influence important decision-making processes because of how they are often excluded from these processes. These challenges call upon innovative methods to respond to the need for creating better opportunities for youth to participate. GenSkabs' citizen social science project at Københavns åbne gymnasium provided this opportunity in which students, through investigated real and authentic problems created a space that tapped into possibilities for empowerment.

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