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Challenges in Conducting Co-Creation Workshops to Study Net Zero Understandings, Initiatives and Sustainable Design Futures with Grassroots Communities - A Case Study

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Abstract

The Co-creation workshop is widely used as a qualitative design (research) approach in understandings of service provision, and is here applied to sustainable design, but there is no one-size-fits-all plan for co-creation. Therefore, our research questions are (1) how to apply co-creation workshop methods for grassroots communities on the unfamiliar 'Net-Zero' concept, and what are practical challenges to be mitigated and how? We researched this through a case study, and here present three key challenges we experienced when conducting a qualitative study on grassroots community opinions/attitudes towards the UK government's 'Net-Zero' strategy. Firstly, recruiting and engaging with participants are challenging because (A) the 'Net-Zero' concept is unfamiliar, and (B) grassroots are in general less well organized and lack clear communication channels. Secondly, finding alternative ways to recruit participants in a short time is challenging, and thirdly, conducting research in the 'wild' way is difficult. From our co-creation experience, advisable solutions to the challenges (as our research contributions) include (1) quickly developing or having a well-prepared alternative plan to actively talk to and invite potential participants to the research location, (2) using alternative qualitative research methods such as short semi-structured surveys or interviews to do on-site 'pop-up' research in the wild, and (3) to locate a workshop where is easier to find participants in the 'pop-up' way and so gather data that can be clearly communicated to the stakeholders able to design and implement future sustainable development for the local community and the future sustainable design of the local environment and energy provision.

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1. Introduction

In the UK, 'net zero' is a governmentally-driven target for reducing greenhouse gases (GHGs) to the extent that it fully decarbonizes the country's power system by 2035 and achieves a fully 'net zero' state by 2050 [1]. This represents a radical and far-reaching set of design transformations in terms of energy generation, waste management, sustainable living and the built environment. The key to successfully achieving net zero is for the UK government to effectively engage the energy sector, businesses, and local community

members (individuals) to initiate energy and emissions change at national and local levels. To explore community engagement with net zero planning, our research project was undertaken to understand how community grassroots group's attitudes to the challenges in relation to sustainable development and governmental drives for a net zero future can be captured to inform sustainability design that will result in substantial change. The specific project research objectives were to gain qualitative understandings of the following questions:

- What does the concept of net zero mean to local people?
- How can individuals identify areas of change and need to enhance sustainability in the local community?
- How can local communities link in a grassroots way with external stakeholders who will design and implement sustainable development programs and ensure that local voices are articulated and heard in terms of how net zero futures are established in the local area?
- To identify potential risks in implementing the co-creation design method and practical mitigation strategies that will inform the future local sustainable design process.

For the research design, we chose the co-creation [2] research method to connect researchers with members of a UK local community (located in South Shields in the Northeast of England), as the value of the method is that it provides opportunities for conversation, discussion, and debate within and between different groups and stakeholders. The success of co-creation requires willing participants for collective creativity, which is heavily dependent on its co-creation involvement strategy and co-creation technique selection [3]. However, no approach provides one-fits-for-all answers. Thus, this paper explores how to apply co-creation workshop method in a case study that is concerned with design processes of the future concerning sustainable energy and urban development to identify (1) what are key challenges in co-creation with the grassroots community on the central government's net-zero policy and (2) how to mitigate the challenges of the research method.

To examine these questions, our investigation started with a co-creation involvement strategy by cooperating with the local library centers in South Shields and Newcastle, as community-based or 'pop up' resource (centers) to engage community members. For the co-creation selection, we planned and conducted an extended co-creation research workshop but found that practical circumstances were challenging and so needed to implement a more flexible approach as mitigated ways to gather data. The lessons learnt from this practical case study are reported in this paper in terms of the challenges of applying co-creation workshops in practical research settings. However, given the argument that to instigate 'a real sustainability revolution a cultural change is required' [4], the ability of the co-creation approach to access the voices of different groups of stakeholders makes it an important method to obtain data that can contribute to future sustainable design processes and governmental energy goals.

2. The Theoretical Background of Co-Creation

2.1 Net Zero, Cultural Spaces and Grassroots Community Engagement

Galvanized by the Paris Agreement in 2015, many nations have committed to radically reduce greenhouse gas emissions with the goal of achieving carbon neutrality

between 2050 to 2060 [4] in the increasingly crucial global drive to mitigate a climate crisis and maintain a habitable planet. To achieve this goal, grassroots movements and organizations have played a longstanding role in campaigning for environmental justice [5,6] as 'grassroots movements can be influential agents of change in a transition to sustainability' [7]. Indeed, for effective sustainability changes, voluntary associations of committed activists and local citizen stakeholders *need* to be engaged with government agencies [8,9]. Therefore, grassroots actors can be seen as 'critical agents in the transition to sustainability' [10] as they can generate 'novel bottom-up solutions for sustainable development' that 'respond to the local situation and the interests and values of the communities involved' [11]. Significantly for the research project, grassroots community-based engagement with net zero strategies and future change is argued to be essential as an effective organisational tool to ensure that local people feel empowered to act on climate change rather than simply being informed of net zero planning by external agents [12].

2.2 Co-creation and Sustainable Place Design and Experience

The methodological approach to co-creation is a significant one in the field of service provision and service experience research to investigate how product experiences and company service value can be enhanced through co-created interactions between service providers and beneficiaries [13]. In this context, co-creation enables consumers to act as co-creators of value in relationships of exchange as value can be co-created through the interaction between a service provider and a consumer [14]. From this perspective, co-creation enhances innovation and stakeholder participation and the input from a wide array of social actors [15]. In terms of its philosophical standpoint, co-creation frequently draws on phenomenological theoretical perspectives, based as it is on gaining an understanding of peoples' understandings of reality [16]. Hence, influenced by principles of phenomenology, co-creation seeks to understand how individuals create value in the context of experience, and how experiences are evaluated and re-evaluated. For instance, Chau [17] identifies a distinctive ecological phenomenology that stresses perceptions of connections with the world from the perspective that humans are dwellers within a world of ecological diversity that grants individuals a palpable sense of place and local identity. Therefore, co-creation and its phenomenological themes represent a salient methodological and philosophical foundation from which to investigate contemporary net zero and sustainable development needs and challenges in the context of their impact on local dwelling places.

Co-creation foregrounds the roles that citizens can play in identifying problems that may need governmental policy actions and the method gives participants the forum with which to 'generate or prioritize ideas or solutions' [18]. Co-creation workshops, often combining a community-based meeting with a practical workshop, have proven to be an

effective qualitative research method for exploring community stakeholder attitudes and feelings towards environmental health and issues [19] that investigate sustainability design in the context of community network building and connection.

3. Research Through Design – A Case Study

3.1 Initial event - exploratory research design with the local community-based cultural centre-The Word

The co-creation approach was selected as the primary method to investigate local community attitudes towards sustainable development and net zero and critically explore values, ideas and personal concerns relating to sustainability needs in a local community setting since it enhances participatory practices and represents both a ‘community meeting and a workshop’ [20].

Co-creation typically requires an engagement platform [15], and the choice of ‘platform’ for this project was a central cultural space, The Word, for the gathering of reflections and ideas that was inspired by a growing body of literature stressing the efficacy of cultural locations, such as museums and heritage sites as prime environments to focus community engagement with sustainability initiatives [21]. Such spaces are argued to be well placed to ‘empower citizens to reflect on the challenges facing society’ [22] as they represent spaces of ‘cultural learning and intergenerational transmission’ [23].

The first co-creation event was publicized two weeks in advance through posters in The Word and on its digital display screens and social platforms (LinkedIn, Instagram, and Eventbrite) to ensure that the event represented an inclusive participatory approach to the research. This was to communicate to the community that the research project was one that was ‘of concern and benefit to the research participants’ reflecting their ‘grounded knowledge’ [24] to produce data ‘directly useful to a group of people’ [25], such as residents, community members, and local authority sustainable development stakeholders.

To engage the local community in relation to these issues, the research team organized an initial one-day research event at The Word in which a series of room-based co-creation workshops would be held consisting of an hour-to-an-hour-and-a-half sessions that would include reactions to specific net zero/sustainability need questions posed by the researchers and responses to visual images. Participants were to be invited to verbally share thoughts and feelings relating to these definitions, concepts, and questions and to also write ideas and responses to sustainability needs and attitudes to net zero on posters that were themed to the issues of transportation, services, energy, education, and green spaces and which were affixed to the research room walls (Fig. 1a). To capture participant ideas the team adopted Sibbit’s (2010) recommendation of the use of a practical tool as simple as post-it stickers as the basis for rapid ideation to instill creativity into meetings, which enabled participants to communicate key ideas that became the basis of a mosaic that was photographed and transferred to exhibition banners

to mix academic, data-based, and visual representations of the research outcomes and findings. Therefore, the research team judged the co-creation workshop to be an effective and straightforward way of visually gathering and then categorizing differing responses and imperatives for the region in terms of net zero, sustainability needs and local citizen engagement.



Fig.1. (a) ‘co-creation’ in The Word; (b) ‘Plan B’ promotion on the street.

While the approach to the design and facilitation of the co-creation workshop was intended to consist of an extensive and extended research session, this rapidly had to be modified as no members of the community responded to the promotional invitations (Fig 1a). Thus, the team shifted the research plan, using a flyer that explained the purpose of the project, asking visitors to The Word to take part in a shortened version of the workshop (Fig. 1b), in which the slides were presented, and participants were invited to write ideas down on post-it notes and to be recorded for short semi-structured interviews (Fig. 2). This attracted a small number of respondents to engage with the PowerPoint presentation and make responses to the questions (in addition to filling in paper-based questionnaires).



Fig.2. (a)-(c) participants engaged in the research by writing down thoughts.

So far, the opportunities and weaknesses of the co-creation approach were encountered by the team as the ideal type of workshop did not happen, prompting the researchers to take an alternative approach- staging a more flexible ‘pop-up’ version of the co-creation workshop to access community-based respondents and engage in the essential qualitative data-gathering and community understandings of net zero more directly.

3.2 The 'Pop up' Co-Creation Workshop

In terms of rethinking the methodology, the Principal Investigator interviewed a local authority Carbon Reduction and Sustainability officer who reported conducting an event based on engagement with local council sustainability activities in the main foyer of The Word, which successfully engaged a range of visitors. Consequently, the co-creation workshops in the next stage of the research were adapted in line with this tactic, and so effectively a 'pop-up' version of the room-based co-creation workshop was designed and implemented. The re-designed co-creation workshop took place in the morning in the main foyer of The Word three weeks after the initial workshop. Regarding informational and creative approaches, a range of sustainability/net zero-based posters were affixed to a table used by the researchers, and a banner was designed and professionally produced by a Newcastle-based graphic design company to distil the informational and conceptual nature of the project visually and textually, and which was placed behind the researchers. The rationale for these materials was that they were positioned to serve as eye-catching graphics for the project, but, more significantly, they also functioned as a distinctive form of probe, to not only engage respondents' attention, but to inform and so act as an ideation tool to inspire ideas, discussions, and the production of written ideas on perceptions of net zero, local sustainable development needs, and community action and engagement.

Probes are valued as research tools as they can play a decisive role in the creation situations of conversation between researchers and respondents and probes are tasks or objects that are meant to elicit inspirational responses from people [26] and which are frequently designed specifically for the research respondent group and can take the form of technological artefacts or pictorial/text-based materials. The probe approach used a series of posters affixed to the table in the foyer of the Word (Fig. 3) that consisted of bright graphics communicating a particular aspect of sustainable development relevant for local communities under the headings of Education, Transportation, Services, Energy, and Green Spaces.



Fig.3. The probe-based 'pop-up' co-creation workshop approach

The aim of the posters was to attract attention but also to initiate discussions around the key themes and how respondents might consider them relevant in terms of their ideas concerning sustainability needs in their local area. Aligned with the posters, the banner, which provided an overview of the key questions and issues contained in the

original co-creation workshop, served as a background to the research and as a further probe tool as it featured concise definitions of net zero, environmental sustainability and community engagement. The visual materials therefore served as a means by which participants could read as the researchers explained the context of the project.

A primary advantage of the 'pop-up' co-creation workshop over the private room-based event was that, while the research team invited visitors to the research space, others spontaneously and directly approached the researchers and reacting to the probes-initiated discussions and so generated further qualitative data. Consequently, the publicly situated and far more concise format of the workshop yielded results that the 'ideal type' extended workshop approach did not.

3.3 Research findings

The data was mainly collected through the two 'pop-up' workshops, representing approximately 30 respondents, therefore adhering to appropriate qualitative sample ranges [27]. Regarding key findings, a common reaction from respondents was that while they reported that initiatives for sustainable development in both national and local context were positive, the concept of net zero was not always fully understood or recognized to the point that, while still a relatively new category, it is potentially viewed as an abstract form of technical 'jargon', whereas the term sustainable development was readily clear to respondents. Developing and realizing an effective net zero policy in relation to Greenhouse Gas removal is a complex, uncertain, challenging, and 'wicked' design problem [28], but co-creation is an effective means with which to engage with 'wicked' social challenges. Key sustainability issues and needs reported by respondents covered issues that will require new modes of sustainable design processes in the future, such as:

- Better recycling facilities and services.
- Increasing education about net zero and alternative ways of living so that local people benefit in their communities.
- More investment in cycling infrastructure to reduce car use to develop central urban areas into being more walkable spaces.
- More investment and development in green spaces and natural environments.
- More efficient public transportation that is electrically powered.
- Design process themes such as more investment in and visibility of renewable energy technologies (wind turbines, for example) and technological and policy assistance granted to companies to reduce the manufacture and use of plastics.
- The provision of more charging points in the town to enhance and encourage electric car purchase and use.
- Investment in community renewable energy, such as the expansion of solar panels in buildings.

Participants identified both locally focused sustainability issues and more macro net zero-oriented factors and many respondents agreed that a grassroots/community-focused approach was an effective means by which partnerships could be formed to enact positive changes. Yet, many also flagged the practical challenges facing them in terms of work and life commitments that would make regular involvement in grassroots activity difficult, but they would still make individual changes to reduce their carbon footprint. On the one hand, respondents flagged sustainability-focused school clubs as a resource that could be based in a cultural space like The Word, while on the other hand, some respondents preferred periodic sustainability-focused workshops to explore and debate community-based sustainability issues. Alternatively, other respondents placed less onus on direct face-to-face engagement and more on the use of online community interaction, but still recognized the value of engage in civic action and environmental debate and engagement to inform local net zero development. Therefore, while the ways in which the locus of sustainability-based grassroots activism differed, a key finding of the project was that a community voice in future sustainable development and net zero technological and strategic change is a vital factor.

4. Discussion

The research project consisted of three interwoven objectives based on the value of cultural centers as communication platforms, local-community-based grassroots use of such spaces, and awareness and attitudes to sustainability and net zero needs, developments, and challenges. In terms of strategy, co-creation invariably takes the form of three categories of research duration: one-off interactions, recurring interactions, and continuous interactions [15]. Given that co-creation in terms of sustainability initiatives are valuable in engaging with multiple stakeholders and enhancing 'sustainable learning', the project, as a pilot study, did succeed in this context in exploring how to make initial qualitative approaches to understanding how a cultural space could represent an effective engagement platform for grassroots engagement to garner community-based sustainability inputs that can be used to inform government-driven net zero policy and future energy planning. So, while the scope of the research was small-scale and based on the one-off respondent contact approach, it nevertheless adhered to the precepts of the co-creation method to collect a range of constructive ideas concerning the value of sustainable development and net zero and engaged with multiple interested parties (community actors and local authority sustainability development stakeholders).

Additionally, the research demonstrated that it is challenging to engage community-based grassroots through co-creation workshops. Firstly, the concepts and actions of net zero are still potentially unclear to grassroots groups and while a misalignment can occur with a methodological approach that does not go to plan once initiated in the field, the revised project proved to be an effective methodological

approach to obtain a range of personal insights into sustainability issues that matter to the local community. From this perspective, the value of co-creation research to explore participant values through interactivity was indicated [14]. What is more, using probes, the researchers were able to establish co-creation expressions of value through the exchange encounters whereby participants shared thoughts, opinions, ideas, and sometimes fears, about sustainable development in relation to their sense of place.

Secondly, unexpected situations happened when we did the first co-creation workshop, with limited time it was not easy to alter to another research method. Critically, while the 'pop-up' co-creation workshop could be argued to represent a more limited data collecting format than extended co-creation workshops, the more visible positioning of the researchers and research materials did invite responses and enhanced interactivity between respondents and the research team and so established the necessary participatory ethos.

Thirdly, conducting 'pop-up' research in the wild required innovations in addressing 'grand challenges' than traditional research methods [29]. While extended participatory discourse with respondents would obviously have produced deeper and more detailed responses and a wider dataset, the use of visual probes marked a significant aspect of the project. This is because while probes (especially in design research) can be specially manufactured artefacts, the use of graphics and concise definitions enabled immediate engagement with participants and led to the expression of community-focused ideas, with the onus on sustainable development rather than net zero as a specific concept in some instances.

In terms of these challenges in co-creation workshops, we suggest that for practical design (1) 'Plan B' research methods and plans need to be prepared related to the practical situation, and location, including 'creative ways' design to attract and engage people and (2) using alternative qualitative research methods such as short semi-structured surveys or interviews to do on-site research in the wild to generate more detailed data required by stakeholders for sustainable community design futures.

To further evaluate the suggestions we derived above, we conducted a focus group consisting of 15 participants with a background in design. The consensus among these participants was that appropriately designed probes are effective in attracting individuals from a design perspective. Notably, 73% of the participants concurred that having an alternative plan ('Plan B') is crucial for addressing potential low-engagement scenarios that may arise during the research process. Moreover, a significant 93% of the participants endorsed the alternative 'pop-up' research methodologies as an efficient means of eliciting ideas or opinions, in comparison to traditional, longer workshop attendances, particularly when considering the time investment required. However, it was also highlighted by some participants that even 'Plan B' might not suffice if the underlying issue is a lack of interest in the topic itself, suggesting that establishing communication channels via social media platforms to communicate the topic better and earlier needs to be considered and further explored.

5. Conclusion and future study

Net zero will have a fundamental impact on design process in terms of its delivery, such as the effective design and production of more efficient renewable resources, waste minimization and high-performance energy-efficient buildings [28]. From our case study research, it is evident that conducting co-creation workshops in cultural centers can provide space for grassroots collectives and reflects the value of co-creation in relation to projects that are based on designing ‘for the public good’ [29], which net zero is fundamentally committed to. Moreover, in the context of this case study, this approach did capture valuable community voices that can inform what is a government mandated strategy for future energy design and sustainable urban planning. However, the one-off co-creation format does result in data that cannot be further evaluated, and so future research will focus on city-based studies that will use larger cultural sites that attract numerous visitors and establish recurring interactions with multiple stakeholders in addition to creating social media platforms to widen the scope of engagement.

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