

Sparking Dynamic Dialogue on Everyday Solutions through Solution Mapping Cards

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ABSTRACT

The contemporary world is amid a dynamic and transformative phase characterised by fundamental shifts, leading to complex environmental, socioeconomic, healthcare, and social challenges. This convergence of multifaceted requires a holistic and innovative approach to ensure a sustainable and harmonious global future. Design for social innovation has introduced novel expertise and methodologies, leveraging the dynamics inherent in social systems to create impactful solutions by actively engaging stakeholders to understand contextual perspectives and minimise knowledge gaps. Solution Mapping Tools facilitate communities to delve into the significance of local needs and assets in addressing everyday societal challenges. Incorporate within these tools, Solution Mapping Cards foster dialogue and understanding by transforming abstract concepts into tangible representations. The main topic resulting from this article revolves around the evolving nature of design thinking, the role of designers in addressing complex problems, and the practical implications of using tools such as Solution Mapping Cards.

Keywords: Solution Mapping Cards, Grassroots Innovation, Bottom-Up Social innovation, Participatory-Based Approach, Community Resilience

ABSTRAK

Dunia kontemporer berada di tengah fase dinamis dan transformatif yang ditandai dengan perubahan mendasar, yang mengarah pada tantangan lingkungan, sosioekonomi, perawatan kesehatan, dan sosial yang kompleks. Konvergensi berbagai aspek ini membutuhkan pendekatan holistik dan inovatif untuk memastikan masa depan global yang berkelanjutan dan harmonis. Desain untuk inovasi sosial telah memperkenalkan keahlian dan metodologi baru, memanfaatkan dinamika yang melekat pada sistem sosial untuk menciptakan solusi yang berdampak dengan secara aktif melibatkan para pemangku kepentingan untuk memahami perspektif kontekstual dan meminimalkan kesenjangan pengetahuan. Perangkat Pemetaan Solusi memfasilitasi masyarakat untuk mempelajari pentingnya kebutuhan dan aset lokal dalam mengatasi tantangan sosial sehari-hari. Dengan menggabungkan alat-alat ini, Kartu Pemetaan Solusi mendorong dialog dan pemahaman dengan mengubah konsep-konsep abstrak menjadi representasi yang nyata. Topik utama yang dihasilkan dari artikel ini berkisar pada sifat pemikiran desain yang terus berkembang, peran desainer dalam mengatasi masalah yang kompleks, dan implikasi praktis dari penggunaan alat bantu seperti Kartu Pemetaan Solusi.

Kata Kunci: Kartu Pemetaan Solusi, Inovasi Akar Rumput, Inovasi Sosial Bawah-Atas, Pendekatan Berbasis Partisipatoris, Resiliensi Komunitas

INTRODUCTION

The global landscape is undergoing profound transformations marked by intricate challenges, including but not limited to climate change, worldwide poverty, healthcare infrastructural concerns, economic upheavals, and social disparity issues. Complex problems involve various interconnected elements that influence each other, uncertain outcomes, constantly evolving, and diverse stakeholders' perspectives [1]. Design thinking is increasingly accepted and impactful. New interpretations of design thinking are emerging, evolving from professional design practice to encompass expertise, diverse thinking, and collaborative methods that address complex challenges with strategic adaptability [2]. Design thinking strongly emphasises user-centeredness, facilitating seamless interaction between learners and tools and transforming field findings into valuable insights. On the other hand, a growing awareness of the significance of adopting systems thinking in design is emerging by embracing the complexities, interconnectedness, and interdependencies around us [3].

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A holistic approach in sensing the system and its dynamics from the insider's or emic perspective of the community, how resilience occurs and can be nourished. Furthermore, this research embraces the anthropological thinking and mindsets [4] embedded during immersion. Sensing the system is more important than finding the solutions because there are no good or bad solutions to wicked problems [5]. Shifting from a project-centric to a portfolio-based approach represents a fundamental reorientation to address the world's complex challenges better today [6]. Researchers have redefined service design by exploring designerly ways of knowing, thinking, and acting in addressing social issues by integrating insights from a service ecosystem perspective. They emphasise resource integration, shared institutional arrangements, and reciprocal value creation. This approach highlights the significance of institutional arrangements in defining behaviour, enabling shared value creation, and guiding social action [7].

Nowadays, designers tackle an ever-expanding range of issues beyond the conventional realms of industrial design and graphic design. They are also venturing into areas such as service design and expanding further to address large-scale social systems and innovation [8]. Design for social innovation can be described as a highly dynamic process involving consensus building, both creative and proactive activities, and a complex co-design process involving designers, non-designers, and various types of artefacts [9]. Emphasising three pivotal aspects in design for social innovation necessitates deeper contextualisation: empowering local stakeholders through participation, facilitating creative connections among diverse actors via collaboration, and adopting a systemic networking approach to enhance relationships and resources, thus fostering the emergence of social innovations.

Design for social innovation has seen the emergence of new expertise and methodologies that harness the dynamics inherent in social systems to create more impactful solutions [10], [11]. An effective way of implementing design for social innovation to fit the appropriate context and minimise the knowledge gap is to actively engage with stakeholders and learn their perspectives on everyday life. For example, in many places, researchers have begun to explore collaboration with local communities to implement indigenous and local knowledge to develop sustainable food systems [12]. Design for social innovation projects showcases design enablers despite challenges. They provide evidence of global progress in a systematic and accessible manner [13].

Firstly, we expressed the importance of community participation and local knowledge in mapping everyday solutions and how needs and assets can be uncovered based on the perspectives and daily lives of the communities around where solutions are created and used. Next, we describe the stages followed in the development of Solution Mapping Cards, which are a reflective medium for participants after being immersed in a community context that directly interacts with solutions and problems faced daily. Then, we share the findings from conducting the Solution Mapping Workshop in different contexts. We sought to gain insights and feedback by testing with urban and rural locations, neighbourhood and micro-enterprise environments, and participants with diverse backgrounds. Finally, based on the field findings and input from the workshop session, we implemented additional improvements to the Solution Mapping Cards.

METHODOLOGY

Design methods have evolved to increase user participation in design decisions, and identifying their objectives has emerged as a pivotal trait. This integration of user input corresponds with current political advancements, mirroring a fresh democratic approach [14]. The importance of the design process is not only an attempt to produce innovations but also an attempt to record and thoroughly understand everyday life to recognise the social structure and sociocultural influences surrounding it [15]. The design generated in everyday life is a new way of understanding the interactions and routines in a context. Users also have capabilities around creativity, resourcefulness, and emergence, which is the sense of a designer in everyday life. [16]. Despite limited infrastructure and access, communities can solve everyday problems with tremendous creativity. Communities have the power of social capital, organising social networks in groups of friends and relatives to collaborate toward shared benefits [17].

Social capital-driven activities have goals that extend beyond the development of products or services, focusing instead on the development of social organisations [18]. Previously, researchers have conducted numerous studies on design tools to investigate community participation. One approach is context mapping, which involves studying all the factors influencing the user experience of a product, using generative techniques to delve into deeper levels of tacit knowledge and latent needs that are challenging to articulate in words [19]. The importance of reflection through the tool conducted early was also emphasised to highlight the diversity of participants and the fact that different groups should be engaged in different ways [20]. In nurturing a participatory mindset, we need to explore how the materiality and familiarity of design tools impact participation [21]. Various papers have also discussed using design tools for addressing diverse contextual issues. The design tool has helped to capture multidimensional understanding, articulate associated conversion factors, and reposition power and agency among cookstove users in Kenya and farmers in Uganda [22]. Designers also developed tools to facilitate indirect communication and relationship building, empowering workshop participants from East Asia to articulate their ideas [23]. Ethnographic methods were used to understand cultural and environmental values in rural Uganda [24]. Finally, an experimental approach implements a design for social innovation involving emerging technologies in New York [25].

The urgency to rethink and redesign empathic design methods and context-appropriate interventions is growing [26]. Participation is not only limited to the involvement of people but also involves knowledge, competencies, values, and relationships. Design should build potential connections, provide channels, and facilitate discussions on common resources such as information, practices, and shared values flowing through the organisation. [27]. To enhance user involvement, we organised Solution Mapping Workshops – sessions aimed at delving into our needs and assets encompassing

natural and human resources [28]. Solution Mapping Workshops took place in two locations, each characterised by a unique context.

For the first case study, the research team involved the participation of the local youth community SimpaSio Institute and the sub-district officer in mapping the everyday solutions created by communities in Riangkotek Village, East Nusa Tenggara Province. The discussion and canvas exercise occurred at Riangkotek Village Hall, next to the village office. In the second case study, the research team engaged Teman Tuli. This deaf community took place in Bandung City Square, West Java Province, focussing on the everyday solutions created by street vendors around the area. The dialogue and canvas completion occurred within Simpul Space, a Bandung Creative City Forum community space. Table 1 contains additional information summarising the contexts of the two case studies.

Table 1. Contextual summary within the case studies

Categories	1 st Case Study	2 nd Case Study
Field Location	East Flores Regency (Rural)	Bandung City (Urban)
Workshop Location	Village hall	Community space
Area	Neighbourhood	City centre
Actors	Residents	Street vendors
Daily activities	Residential areas	Selling foods and goods
Participants	SimpaSio Institute	Teman Tuli
	East Flores sociocultural archiving and study community.	The deaf community educates the public about deaf culture and sign language.
Number of Participants	16 participants	14 participants
Duration	2 days	2 days

The interplay between the tools prepared by design facilitators and the varied interpretations of participants leads to the emergence of innovative, collaborative outcomes, defining the core of design facilitation [29]. Adapting a service design framework is essential to unifying experiences in various contexts. Its tools collectively align, create transparent conversations, facilitate inclusive decision-making processes, and encourage purposeful meaning and impact [30]. Solution Mapping Workshop is a collective approach that seeks to highlight the invisible aspects of the system to allow participants to reflect and map the potential that can be developed [31]. The design approach encourages experimentation and prototyping, turning abstract ideas into tangible representations. Solution Mapping Tools employ the opposite principle; we can map potential developments that fit the context by identifying everyday solutions. Solution Mapping Tools enable communities to understand the importance of local needs and assets in addressing everyday social challenges [32], co-designed by Design Ethnography Lab FSRD ITB, UNDP Accelerator Lab Indonesia, and Wanara Studio. Solution Mapping Tools comprise Guides, Notes, and Canvas (as presented in Figure 1), which Solution Mapping Cards then complement.



Figure 1. (a) SolMap Guides and Notes; (b) SolMap Canvas.

Learners should first engage in immersions and mapping everyday solutions to facilitate understanding of the concepts and effectively utilise Solution Mapping Tools. However, due to unfamiliar terms within these tools, researchers must address the challenge of designing a medium that effectively explores learners' comprehension. In our approach, we opted for card games as the chosen medium. Solution Mapping Cards encourage participants to express and openly discuss their first-hand experiences in the field. They are thoughtfully designed to spark dialogue and build conversations to absorb multiple perspectives and diverse aspects of everyday solutions. This inclusive approach emphasises the importance of suspending judgment and valuing all contributions, which ultimately nurtures the generation of new concepts [33]—engaging artistic approach through illustration as a learning medium goes beyond mere aesthetics. It is a multifaceted instrument that can significantly influence sensory experiences, enhance cognitive abilities, and inspire our imagination.

Crafting Solution Mapping Cards, as depicted in Figure 2, involves several key steps. Firstly, we identify the essential keywords within the Solution Mapping Tools. Subsequently, a deliberation phase is initiated to establish appropriate descriptions for these keywords. Once these descriptions are determined, we progress to the enrichment phase, where additional relevant information is incorporated to enhance the cards' content. Finally, visual illustrations are added to represent the concepts comprehensively. In the broader context, the Solution Mapping Canvas is a medium for reflecting grassroots solutions within the system. At the same time, the Solution Mapping Cards serve to capture the thought processes and attributes necessary for exploring everyday solutions.

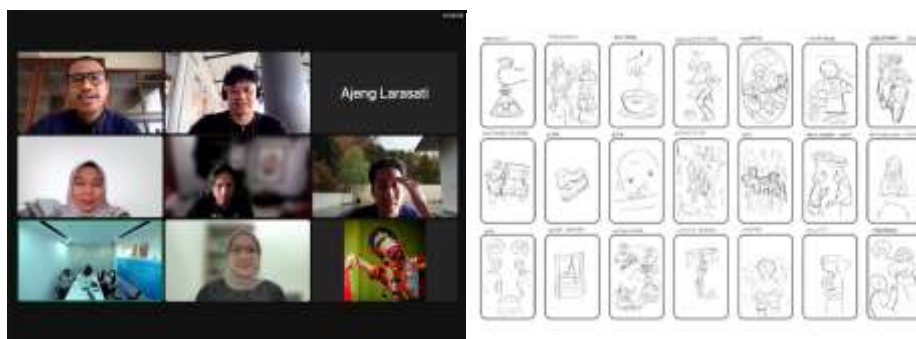




Figure 2. (a) Identify the essential keywords; (b) Establish descriptions and illustration; (c) Information and illustration refinement; (d) Illustration as concept representation.

Solution Mapping Cards act as a dynamic and accessible tool strategically designed to amplify participants' grasp of the nuanced terminology embedded within the framework of Solution Mapping Tools. This curated collection encompasses 23 cards, each pairing a pivotal keyword with a succinct yet elucidating description. The judicious inclusion of visual representations on these cards effectively immerses participants in the contextual backdrop of these terminologies, fostering a deeper and more intuitive comprehension of their applications. An exceptional feature of these cards is their intentional crafting to encourage open-ended engagement, avoiding rigid constraints that could stifle creativity or dialogue. This design philosophy empowers participants to freely explore the dimensions of these keywords, allowing for diverse interpretations and fostering rich discussions that organically flow from the participants' experiences and insights.



Figure 3. (a) Keywords and description (front view); (b) Illustration (back view)

The purpose of the Solution Mapping Cards goes beyond linguistic intentions. They assume the role of a reflective mirror, particularly potent after participants have immersed themselves in real-world contexts, witnessing first-hand the innovative solutions that communities devise to overcome challenges. By engaging with this card set, participants consolidate their learning from the field and harness it as a catalyst for dialogue, igniting conversations that ripple with inspiration, mutual understanding, and novel perspectives. In this capacity, the Solution Mapping Cards act as a spark that ignites profound and transformative exchanges among participants.

RESULTS AND DISCUSSION

Solutions mapping and immersion are ways to connect with people and communities affected by different situations. These methods help us understand their daily lives, experiences, and surroundings. Immersion lets us see how their realities are shaped from their perspectives, helping us learn why they do things the way they do. Solutions mapping allows us to recognise practical solutions, skills, strengths, and strategies that local communities have developed to deal with challenges during

development. It also extends our understanding of how solutions and needs are paired and how grassroots solutions can be used as an entry point to identify unaddressed or unmet development challenges. Our research focuses on bottom-up social innovations driven by grassroots communities rather than governmental or non-governmental organisations. These communities utilise their assets, both natural resources and technical skills, to address and fulfil their requirements. This research seeks to embed the design mindset in transdisciplinary where non-designers could reasonably adopt the mindset features of the discipline without necessarily becoming expert designers [34].

Table 2. Step-by-Step Guide to Playing Solution Mapping Cards

Steps	1 st Case Study	2 nd Case Study
Step 1	We divide participants into pairs, forming groups of two individuals each.	We divide participants into pairs, forming groups of two individuals each.
Step 2	Cards are distributed randomly to each group	Participants are free to choose the card they find visually appealing.
Step 3	The first person in each pair holds the card and initiates the dialogue, while the second person becomes the guesser	The first person in each pair holds the card and initiates the dialogue, while the second person becomes the guesser
Step 4	Facilitators allocate time for all participants to visualise and contemplate the content of the illustration on the card.	Facilitators allocate time for all participants to visualise and contemplate the content of the illustration on the card.
Step 5	The first person starts by giving clues and triggers related to the card, and the second person begins guessing.	The first person starts by giving clues and triggers related to the card, and the second person begins guessing.
Step 6	The first person explains the keywords and descriptions on the card's back.	The first person explains the keywords and descriptions on the card's back.
Step 7	The second person shares their experiences and reflections on the keyword and its description.	The second person shares their experiences and reflections on the keyword and its description.
Step 8	The first person also shares their experiences and reflections associated with the keywords and descriptions.	The first person also shares their experiences and reflections associated with the keywords and descriptions.
Step 9	Following this, the first- and second-person swap roles and the process is repeated starting from step 2.	Following this, the first- and second-person swap roles and the process is repeated starting from step 2.

Table 2 outlines the procedure employed for the Solution Mapping Cards session in both case studies. While most steps were consistent across both groups, a distinction arose in how participants selected cards (step number 2) between the two case studies. In the first case study, the facilitator distributed the cards randomly. In contrast, in the second case study, participants had the option to choose based on their preference for the visual appearance of the illustrations. In the first case study, the research team involved the participation of the local youth community SimpaSio Institute and the sub-district government in mapping the everyday solutions created by communities in Riangkotek Village, East Nusa Tenggara Province. The participants, who were involved in archiving and studying East Flores culture daily, conducted a Solutions Safari in a residential area around the village hall. Participants visited and conversed with homeowners about the household furniture they create and use daily. Some of the group's findings were a bamboo-based Moke distillation apparatus, a slaked lime container, a bamboo clothes hanger, a palm leaf-based carrier, and various bamboo household appliances. Then, the Solution Mapping Cards session was held after the tools introduction session and before canvassing. Participants were briefed on using the tools first, then could reflect on the keywords on the cards with their experiences in the field before canvassing together (see Figure 4).



Figure 4. Solution Mapping Cards session in Riangkotek Village Hall.

For the second case study, the research team was assisted by sign language interpreters engaged with Teman Tuli, a deaf community, to map out everyday solutions in Bandung City Square, West Java Province. All participants, actively advocating for deaf culture and sign language, engaged in a solutions safari at the city's bustling heart. Their primary focus was exploring the practical solutions developed and used by street vendors nearby. These solutions are part of their daily routines and contribute to the area's vibrant atmosphere. Distributed across various regional locations, the groups identified several findings of selling equipment such as mobile beverage trays, toy vending hangers, carrying poles, and modified shopping carts. During this case study, sign language interpreters also took on the role of facilitators due to their vital contribution to ensuring the seamless execution of all activities.

Furthermore, we conducted the Solution Mapping Cards session before introducing the Solutions Mapping Tools and collaboratively completed the Solution Mapping Canvas. Participants immediately tried to understand the keywords and associate them with immersive experiences. Having participated in the previous Solution Mapping Cards session, we anticipate that participants will be better prepared to engage with the upcoming material regarding the introduction of tools. This session has facilitated their ability to subsequently contribute to canvassing (as presented in Figure 5).



Figure 5. Solution Mapping Cards session in Simpul Space.

Based on the two case studies conducted in distinct locations, involving participants from diverse backgrounds and their respective contexts, we have gained several critical takeaways about Solution Mapping Cards:

1. *Acts as a conversation starter*—direct participants to express their thoughts on everyday solutions. Language adaptation is also essential when conducted in multiple locations.
2. *Acts as a medium for reflection*. Illustrations facilitate participants' grasp of context, allowing them to immerse more profoundly and fostering the emergence of perceptive conversations.
3. *Acts as a catalyst*. Inspire communities to be creative and resourceful with their limited assets while also providing them the space to envision possibilities for the future.

CONCLUSION

The main argument in this article is that the integration of anthropological mindsets and systems thinking has allowed design for social innovation to evolve, enabling it to tackle complex challenges. Furthermore, the artistic approach employed in the illustrations is crucial in stimulating the senses, cognitive capabilities, and imagination when mapping out solutions. Designers are expanding their scope beyond traditional design disciplines and venturing into areas like service design, which allows them to tackle large-scale social systems and innovation. Solution Mapping Cards serve as a medium for sparking dialogue and understanding among participants. Participants can articulate their experiences mapping daily solutions through these cards and better understand the terminology used in the Solution Mapping Tools. Hands-on experiences during solution safaris and workshop discussions overcome the challenge of understanding unfamiliar terms.

There was discussion among the participants through the Solution Mapping Cards; they gained an understanding of the terms used in the Briefing session and the Solution Mapping Tools. Through immersion, participants learned how everyday solutions that reflect needs are born from the deep experiential knowledge of a problem. While using keywords and illustrations can significantly enhance participants' understanding, it is imperative to remain mindful of their potential limitations in diverse

contexts and their susceptibility to bias. To address these challenges, allocating time for thoughtful reconsideration becomes crucial. This endeavour allows for the assessment of appropriateness and encourages a culture of openness to feedback. Delving into the accessibility of keywords and the effectiveness of accompanying illustrations ensures a more inclusive and effective communication approach. By embracing these principles, we create a space where understanding is optimised, regardless of differences in viewpoints and situations.

Participants were pleased they had the agency and power to discuss innovation in their context. After the workshop session, participants should be capable of organising and leading workshops within their communities and specific contexts. They can freely access and utilise the provided tools. The design methods should exhibit flexibility and adaptability, allowing them to gather insights while effectively navigating the varied contextual differences. These methods should be capable of accommodating and responding to the unique circumstances, challenges, and nuances in diverse environments. By being adaptable, these design methods can better address each context's specific needs and intricacies, enhancing their relevance in generating valuable insights.

Engaging in collaborative efforts with a diverse group of people and organisations is a deliberate approach aimed at enriching the inclusiveness of the tools. When we involve individuals, groups, and organisations with different viewpoints and expertise, we can make the tools fit well in many situations, even those not discussed in this paper. This collaborative approach ensures that the tools are more versatile and applicable across different situations, thus expanding their reach and impact beyond the limitations of the current paper's focus. Enabling the tools to be customised to specific needs and intricacies of diverse settings enhances their effectiveness and value across a broader range of scenarios. The critical discourse generated from this article revolves around the evolving nature of design thinking, its application in social innovation, the role of designers in addressing complex problems, and the practical implications of using tools such as Solution Mapping Cards. Future development of the Solution Mapping Cards should consider adaptability to different contexts, offering game-like structures and interactive elements to facilitate engaging and lively discussions among participants. Further research is also needed to assess the impact of using Solution Mapping Cards on participants' understanding.

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