# How to Make Guides?

## technologies for regenerative creativity

Project Raport

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Medialogy

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## Abstract:

This thesis investigates how guides can be designed to support regenerative creativity through accessible, participatory, and sustainable approaches.
Using a Research through Design methodology, the project combined analog and digital prototyping with mixed methods fieldwork at a festival. Data were gathered through a 10-question physical survey, semi-structured interviews, and participant observation, engaging over 60 festival-goers in co-creative activities.
Analysis followed a convergent parallel mixed methods design, integrating descriptive survey trends with thematic insights from interviews. Findings reveal strong user preference for low-barrier, physical entry points-such as printed zines-supplemented by modular digital tools that allow personalization, remixing, and community contribution. Trust in AI was low unless outputs were transparent and human-curated, while social and convivial settings significantly increased willingness to participate. Key barriers included time constraints, lack of creative confidence, and limited material access.
The thesis contributes design principles for regenerative guide systems that blend tangible and digital formats, foster transparency and community trust, and lower participation thresholds. These insights inform future development of waterlike.tools and similar platforms, with potential to scale from local maker contexts to broader systemic change initiatives.


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i wanna say thank you to my supervisor Cumhur and to AAU + Innovation  for the guidance and insight

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# Chapter 1: Introduction

## 1.1 Background

Over the past century, industrial production and global supply chains have driven unprecedented resource extraction-pushing Earth systems beyond safe limits[1].

70% of people think we are heading for a  disaster if we don't change[2].
We seem to have all the knowledge and technology available in order to change this.

Meanwhile the technology and knowledge is becoming monopolized, trading user attention for profit, often amplifying disinformation, putting quantity over quality and content over being content or social[3].

Ecological limits and digital overproduction highlight the need for sustainable alternatives - not only in what we produce, but how we learn, share, and create. The convergence of climate urgency, peak consumerism and overwhelming misinformation should be a signal or even a call for tools that prompt regeneration rather than extraction.

There are many ways to "nudge" or direct users to certain actions. This is used a lot in advertising and can be sometimes seen as deceptive or even unethical[4] [5]. On the other hand guides can be general directions or suggestions to tell us what to do to achieve a certain goal, they can provide support and leadership. A recipe is usually a procedure in a linear form that can be delivered in the form of a written instruction, video tutorial or audio description. Just like a cooking recipe or  science experiment it is made so that it can be replicated with a certain degree of accuracy. It's a form of instructional knowledge[6].

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[1] Steffen et al., "Planetary Boundaries."
[2] "PEOPLES' CLIMATE VOTE."
[3] *The Politics of Platformization*.
[4] Zuboff et al., "Surveillance Capitalism."
[5] Whitehead and Jones, *Nudging*.
[6] Merrill and Others, "Reclaiming Instructional Design."

We can find a lot of these formats through social media, forums, dedicated websites, books or even our parents or grandparents. Sometimes similarly to other content formats the sheer amount of guides can become overwhelming making it harder to decide which one to trust, follow or even to find direction.

This thesis explores how guides can be redesigned to be tools for radical imagination and regeneration. Can we switch the consumerist mindsets into creative ones by providing systems that support users in acting meaningfully and un-learning those behaviours together. However, this involves users' adoption not only of new technologies, but most importantly new/old values.

## 1.2 Motivation

This thesis is rooted in the belief that **creativity is a basic human capacity** - not a luxury, but a tool for resilience, radical imagination,regeneration and change. In a world shaped by extractive production systems and passive consumption models, reclaiming the ability to make, reuse and repair, as well as share knowledge is not only empowering - it is essential.

> "Too many things are made far away, fast, and without us.
> This process is extractive - and it is time we made a change" - waterlike™

**waterlike™.tools** is a response to this condition. It aims to help people create **household goods and tools** from **local, upcycled, or second-life materials**. The emphasis is not just on sustainability, but on **participatory knowledge creation**. Whether it is through DIY guides, workshops, or community-led production, the goal is to build systems where everyday making is **transparent, hands-on, and collaborative**.

Inspired by the philosophies of **open-source software**[7], **permaculture**[8], **maker movement**[9][10] **and degrowth**[11] or its predecessors DIY[12], **Arts & Crafts**[13] and **Bauhaus**[14], waterlike™ treats creativity as a tool for change. Yet, despite the ideals of the maker movement or open design many of the knowledge systems still fall short. They often:

- Require technical expertise that excludes newcomers.
- Overwhelm users with information instead of inviting them into action.
- Emphasize individual productivity over shared care; art objects over purpose.

By focusing on the **designing of guides for regenerative practices**[15], it asks how we might **activate sustainable creativity for all**[16] - not just for the skilled, the technical, or the "creative". It aims to develop tools that are **modular**[17], **accessible**[18], and **rooted in the realities of everyday life**[19] - tools for liquid modernity that flow between analog and digital, human and machine, individual and collective.[20]

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[7] Tozzi, *For Fun and Profit*.
[8] Leahy, *The Politics of Permaculture*.
[9] Konopasky and Sheridan, "The Maker Movement in Education."
[10] Dougherty, "The Maker Movement."
[11] D'Alisa et al., *Degrowth*.
[12] Wolf and McQuitty, "Understanding the Do-It-Yourself Consumer."
[13] Mosby, "Arts and Crafts."
[14] "Bauhaus, 1919-1933."
[15] Lyle, *Regenerative Design for Sustainable Development*.
[16] Perez, *Democratize Creativity*.
[17] Baldwin and Clark, *Design Rules*.
[18] Mack et al., "What Do We Mean by 'Accessibility Research'?"
[19] *Szczeliny istnienia*.
[20] Bauman, *Liquid Modernity*.

## 1.3 Research Questions & Problem Statement

### Initial Problem Statement

How can we use digital media to support **creation instead of consumption?**

### Main Research Question (RQ1)

How can digital guide systems be designed to foster regenerative, sustainable, and accessible creative practices?

### Sub-Questions

#### Activation & Engagement (SQ1)

How can digital guides prompt meaningful user action rather than passive consumption?

#### Accessibility & Agency (SQ2)

How can interfaces balance low barriers to entry with creative potential (low-floor/high-ceiling design)?

#### Role of AI & Emerging Tech (SQ3)

In what ways can AI, AR, and semantic principles augment user trust, accessibility, and agency?

#### Knowledge Structure & Co-Creation (SQ4)

How can a knowledge system support both structured guidance and open-ended co-creation?

## 1.4 Thesis Structure & Objectives

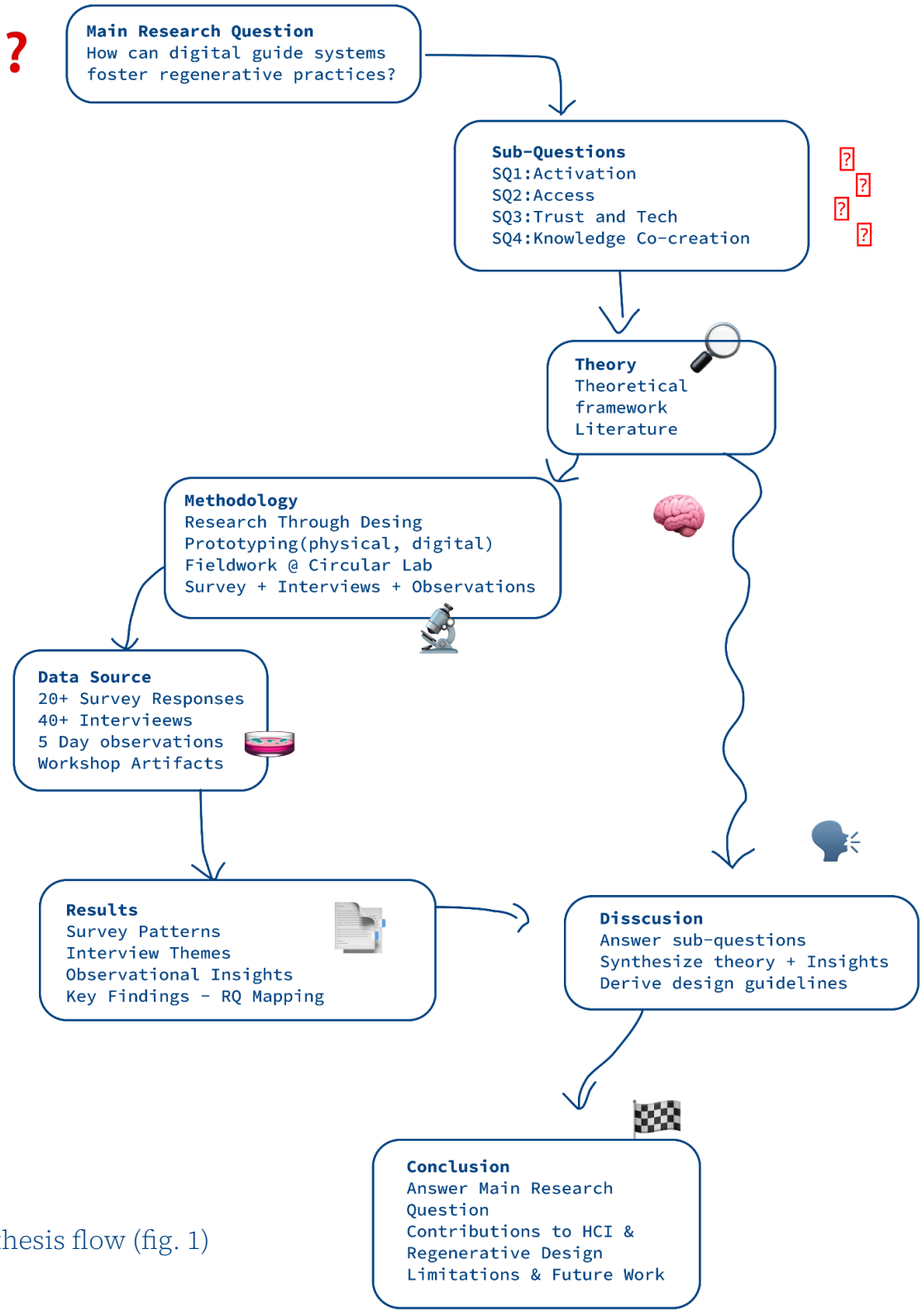



diagram of thesis flow (fig. 1)

As presented on figure 1 (fig 1.) the structure of the thesis centers around a main research question with 4 sub-questions that help to answer a complex problem. Design based research methodology directly maps to those supporting questions. Tying together the results with theoretical foundations and discussion leads to forming answers, guidelines and concrete conclusions.

The main objectives are:

- **Explore & Design** tools that can be used for making, exploring knowledge and guiding creation
- **Prototype & Test** its effectiveness in terms of accessibility, trust, and activation
- **Research** the role of technologies (ex. LLMs, UI, semantic structuring) in knowledge-sharing
- **Evaluate** user empowerment techniques and guidelines for the design of tools for regeneration

# Chapter 2: Theoretical Framework

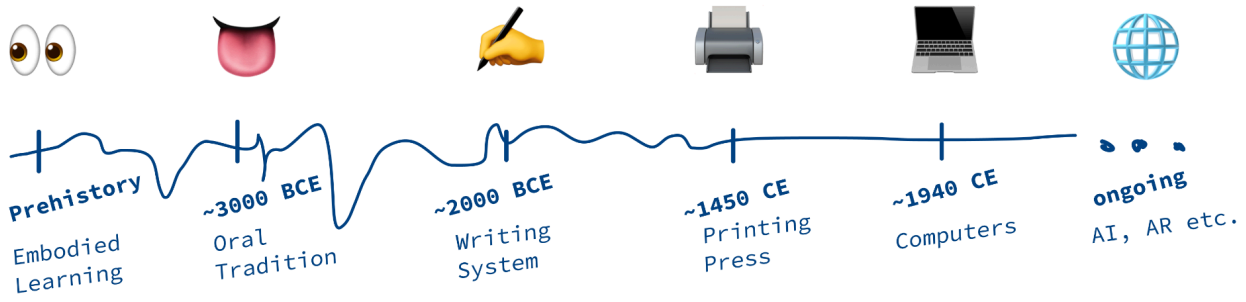
This chapter reviews key concepts and frameworks relevant to knowledge sharing, creating accessible, guide systems as well as regenerative creative practices . It draws from human-computer interaction, sustainable design, media and information theory. The aim is to ground the thesis within existing research while introducing  the terms and context that is shaping its direction.

## 2.1 Knowledge Sharing & Media Evolution

Before the emergence of new media, knowledge sharing was deeply **embedded in social, cultural, and material practices**[21]. Skills and stories were passed down orally within families and communities, through **rituals, apprenticeships, and observation**. Agricultural techniques, medicinal remedies, and craft methods were transmitted intergenerationally, often through **embodied learning** and communal labor. [22]

Afterwards written records took the form of manuscripts, books, zines, manuals, or letters, which required intentional effort to create and distribute. In this context, knowledge was **living**, **context-dependent**, and often **local**- an organism anchored in human experience. While slower and less scalable, these analog methods offer some tangible and intangible values that contemporary media is struggling to replicate.[23]

approximate timeline of knowledge systems with non-linear horizontal scale (fig. 2)




[21] Harari, *Nexus*.
[22] Miyagawa et al., “The Integration Hypothesis of Human Language Evolution and the Nature of Contemporary Languages.”
[23] Barth, “An Anthropology of Knowledge.”

Understanding the evolution of knowledge sharing modalities (fig.2) can give us an insight into values that are embedded in them - some fostering local stewardship and co-creation[24], whilst others privilege productivity, exclusivity or centralization. [25] [26]

### From Print to Pixels: The Last Major Shift

Historically, the flow of information shifted from **embodied learning through oral and written and printed language.** The last major revolution came with the transition from **print to pixels**[27].

These new digital technologies have fundamentally and rapidly reshaped the way knowledge is produced, distributed, and acted upon. It allowed for new kinds of realtime interactions to emerge. We do not have to follow the linear, static form of a book anymore. We are allowed and even encouraged to comment, interact, adapt, and use powers of complex algorithms to chew, and digest the content before serving it to us.

### The Internet and Open Infrastructures

The Internet promised and enabled unprecedented decentralization of knowledge sharing. There is potential for these tools to support **inclusive cooperative life**[28] [29]. Early platforms and protocols empowered individuals and communities to collaborate across borders, co-develop open standards, and build distributed knowledge systems[30]. The ethos of the early Internet aligned with values of transparency, collective authorship, and regenerative thinking[31]: individuals could contribute to shared repositories of knowledge, often without intermediaries or gatekeepers. One may particularly be an example of open and transparent technology that was only possible due to the rise of computing Free Open Source Software (FOSS). It represents these ideas at its core and could help movements and collaborations spread globally. The **movement** began in the 1980s as a political and ethical response to

[24] Kullenberg et al., “What Are Analog Bulletin Boards Used for Today?”
[25] Pedrero-Esteban and Barrios-Rubio, “Digital Communication in the Age of Immediacy.”
[26] Horst and Miller, *The Cell Phone*.
[27] Harari, *Nexus*.
[28] Srnec and Guttmann, “Platform Cooperatives, a Model of Commons and Sustainability.”
[29] Benkler, *The Wealth of Networks*.
[30] Castells and Castells, *The Rise of the Network Society*.
[31] Rheingold, *The Virtual Community*.

proprietary software. It was spearheaded by figures like **Richard Stallman**, who advocated for user freedom through Free Software Foundation he wrote the Four Freedoms[32]:

- The freedom to run the program as you wish, for any purpose (freedom 0).
- The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help others (freedom 2).
- The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.[33]

FOSS is more than a licensing model - it is a **cultural and political stance** against digital monopolies. It empowers users to **understand, adapt and control** their own tools, reflecting ideals of **transparency, mutual aid, and autonomy**. It laid the foundation for modern ideas like the **open design movement**, **creative commons**, and **community-led knowledge systems**.[34]

Another notable example of infrastructural empowerment is **Git** - a distributed version control system originally developed by Linus Torvalds in 2005.[35] Git enables users to fork, branch, and merge changes in software projects without losing original versions, embodying principles of **modularity, transparency, and peer contribution**. [36]This architecture offers a compelling model for open-ended, non-destructive collaboration - one that knowledge-sharing systems can benefit from. Just as Git allows developers to document, track, and co-evolve source code, a knowledge commons for DIY, repair or local production could enable the co-creation and versioning of guides, practices, and community blueprints.[37] [38]

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[32] Stallman and Gay, *Free Software, Free Society*.
[33] "What Is Free Software? - GNU Project - Free Software Foundation."
[34] Tozzi, *For Fun and Profit*.
[35] Torvalds and Diamond, *Just for Fun*.
[36] Chacon, *Pro Git*.
[37] Sakai and Tsunoda, "Implementation of Decentralized Version Control in Collective Design Modelling."
[38] Arndt et al., "Decentralized Collaborative Knowledge Management Using Git."

Co-creation of knowledge has been exposed to a larger public due to the success of **Wikipedia**, where transparent history tracking, open authorship, and decentralized maintenance have helped build a relatively trusted global knowledge platform[39]. Wikipedia's approach has also sometimes been criticized for trying to present one version of truth in the same dry format.[40] These systems require human effort: moderation, consensus and care - characteristics aligned with **conviviality**[41], and **slow knowledge** practices[42].

### Digital Gardening as knowledge cultivation

The values embedded in the FOSS movement: **transparency, user freedom, and collective improvement** extend far beyond software. They offer a foundational model for how we might approach **regenerative knowledge systems** with *participatory design values*[43] and *knowledge commons*[44].

**An model of knowledge organization that is getting a lot of attention is called** "second brain"[45] This concept revives earlier systems like the **Zettelkasten**[46], and lives today in tools such as Obsidian,[47] Roam Research[48], and Logseq[49] However, what is often missing in these programs is the **collaborative layer**. This need is being addressed in some iterations of a trend called **digital gardening**[50]. Unlike blogs, which are linear and time-stamped, digital gardens are **modular, non-linear, and continuously evolving** [51]. They merge some of the aspects of wiki, second brains and blogging allowing users to revise and update content, linking ideas across themes and formats - more akin to tending plants than publishing final

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[39] Lucassen and Schraagen, "Trust in Wikipedia."
[40] Tumlin et al., "Collectivism vs. Individualism in a Wiki World."
[41] Illich, *Tools for Conviviality*.
[42] Sennett, *The Craftsman*.
[43] Bødker et al., Participatory Design.
[44] Frischmann, Governing Knowledge Commons.
[45] Forte, *Building a Second Brain*.
[46] Kadavy, *Digital Zettelkasten*.
[47] "Obsidian - Sharpen Your Thinking."
[48] "Roam Research - A Note Taking Tool for Networked Thought."
[49] "Logseq: A Privacy-First, Open-Source Knowledge Base."
[50] Archiwaranguprok and Toahchoodee, "On Digital Gardening."
[51] Westerlaken et al., "Digital Gardening with a Forest Atlas."

statements. They sometimes support shared meaning-making and versioned open, co-creation like private wikipedias. An approach to knowledge similar to that of the iterative design processes that we all know well.

In this way, digital gardens can become the **epistemic and aesthetic cousins of open-source repositories**: slower, more personal, but equally committed to **empowering individuals to understand, build upon, and remix what they inherit**. Transparency in this context is not only about seeing the source but about understanding how things are made, seeing the process and feeling invited to join in on the making.

### Semantic Structure and Remixability

The modular nature of digital gardens aligns with **semantic web principles**, where content is broken into structured units, each with metadata and relationships. This increases **discoverability, remixability**, and reuse - core needs for regenerative design[52].

Such knowledge containers can become **fluid platforms** - not just tools for consumption, but systems for emergence. Knowledge becomes “compost”, remixable and relational, resisting the corporate logic of “finished products”[53].

As we explore new media for knowledge sharing, the **goal is not the scale but the depth** - systems that regenerate knowledge, not extract it. By learning from past systems, embracing modularity, and cultivating knowledge like gardens, we can design tools that are not only useful but also transformative.[54]

### LLMs and the Challenge of Opaque Automation

Nowadays  we are experiencing another transformative tool shaping right before our eyes. Due to the rise of **Large Language Models (LLMs)**[55] we see another transition in transmitting information. One from human to machine created content. From information located in thoughts or letters and passed on

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[52] Berners-Lee et al., *The Semantic Web: A New Form of Web Content That Is Meaningful to Computers Will Unleash a Revolution of New Possibilities*.
[53] van Abel, *Open Design*.
[54] Bowker and Star, *Sorting Things Out*.
[55] Naveed et al., “A Comprehensive Overview of Large Language Models.”

through generations  to data-points and latent vectors located in servers generated on the spot from latent spaces we do not always understand.

Tools such as ChatGPT[56] represent a shift toward highly accessible, flexible, tailored forms of information delivery. While assistance of an advanced chatbot can dramatically lower the barrier to entry for understanding complex ideas, their output lacks traceable origin. It tends to merge facts with plausible fiction, also known as **hallucinations[57]**, making it oftentimes **opaque** . Unlike Git or Wiki systems - where contributors are visible and edits reversible - LLMs generate content on the spot  without clear authorship or embedded accountability. This also reduces the trustworthiness of such models in the long run and to alleviate it some suggest RAG-approach which generates text based on trusted content sources[58].

Each generation is also backed by computational and thus environmental costs that are hard to estimate[59]. The outputs of the chats with LLM's become visible only for one user asking the question (and the company running the server). Thus not only making this less energy efficient but not contributing to collective understanding of the subject or to any discussion.

It is not a secret that there are other issues besides ecological sustainability of AI[60]. Its critique can be seen in popular culture such as images and viral videos of people talking about how they are being encouraged to use this technology despite the concerns.[61]
The issues mentioned in this  particular video  with links to corresponding articles include impairing cognition[62],  copyright infringement[63], psychological issues[64], taking jobs away from humans[65], racist

[56] "OpenAI."
[57] Maleki et al., "AI Hallucinations."
[58] "When AI Gets It Wrong: Addressing AI Hallucinations and Bias - MIT Sloan Teaching & Learning Technologies."
[59] Jegham et al., "How Hungry Is AI?"
[60] "Explained: Generative AI's Environmental Impact | MIT News | Massachusetts Institute of Technology."
[61] Wilson, "There Are so Many Great Things about Generative AI! Impossible to Pick a Favorite."
[62] "ChatGPT's Impact On Our Brains According to an MIT Study | TIME."
[63] "The Unbelievable Scale of AI's Pirated-Books Problem - The Atlantic."
[64] "ChatGPT Psychosis: AI Chatbots Are Leading Some to Mental Health Crises | The Week."
[65] "Jobs AI Will Replace First in the Workplace Shift."

biases[66]. it is messing with reality in ways that are hard to predict and the coverage of these topics in social media and popular magazines shows public's interest in the subject . Besides that, its convenience of AI-driven content creation risks reinforcing extractive dynamics - not just of energy and data, but also of user agency and epistemic trust.

### Toward Regenerative Knowledge Systems

This research aims to assess which technologies foster openness, agency, and long-term resource stewardship, and which, in turn, contribute to extractive, centralized, or passive modes of engagement.

Despite all of this, are these tools empowering users to take informed, situated action?

Or do they merely promote **passivity**, ignorant consumption and reliance on centralized infrastructures?

When building knowledge-sharing systems in service of **regenerative creativity and** want to take advantage of the AIs undisputed affordances we must also be cautious of its shortcomings especially in terms of **transparency**, **participation**, and **traceability**[67]. **We** might like to explore using AI not as a cloud substitution for humans but as local assistive technology for open knowledge infrastructures to build systems **sustainable by design themselves**[68]**.**

## 2.2 Conviviality, Degrowth, Regeneration, Access

The sheer speed of adaptation of new technologies gives us little to no room for reflection or sensitive design. Some people advocate for slowing down technological progress in order to leave room for rumination and scrutiny[69]. Even the researchers and developers that are very involved in the field of Artificial Intelligence are concerned about the lack of control, regulation and direction with those tools[70]. Geofrey Hinton, one of the early inventors of Machine Learning, recently predicted that there is a 20%

[66] Hofmann et al., "AI Generates Covertly Racist Decisions about People Based on Their Dialect."
[67] Von Eschenbach, "Transparency and the Black Box Problem."
[68] Fu et al., "Generative AI in the Context of Assistive Technologies."
[69] Hickel, *Less Is More*.
[70] Korbak et al., "Chain of Thought Monitorability."

chance of extinction due to AI[71]. Sam Altman, CEO of OpenAi, thinks we are standing on the verge of a Fraud Crisis and is surprised how much people trust chatGPT[72].

This is just a fraction among signals that maybe we should slow down the current speed of technological advancements. Moreover, this is not a new idea, it was and is being suggested by the **degrowth**[73] movement - not only in relation to technology but also to the economy. The principles behind the movement are slowing down technological and economical progress and to stop measuring success through growth based metrics such as GDP. One of the ways that this can be achieved besides the regulations is the design of tools that support human self-reliance.

### Tools for conviviality

Degrowth studies argue that we need to turn away from systems of expansion to those of care and slowness. One of the first advocates of post-growth, anti-capitalist approaches was Ivan Illich[74], who introduced the term "conviviality". The word can be translated to friendliness or "**the enjoyment of festive society"**. **Tools for conviviality** are characterized by simplicity, adaptability, and their capacity to be modified by the people who use them. They are designed to empower users rather than make them dependent on external expertise or centralized systems. This approach stands in contrast to closed, proprietary systems that reduce user control and strengthen centralised power.

Recent Human Computer Interaction (HCI) research has extended this idea by emphasizing user **agency** - the ability to act intentionally within digital systems. Schneider et al. (2018) propose that the empowerment in interaction design must include not only access and usability but also user autonomy[75]. One of the ways that we can ensure users' sovereignty is through transparency.

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[71] "'Godfather of AI' Shortens Odds of the Technology Wiping out Humanity over next 30 Years | Artificial Intelligence (AI) | The Guardian."
[72] "OpenAI CEO Sam Altman Warns of an AI 'Fraud Crisis' | CNN Business."
[73] D'Alisa et al., *Degrowth*.
[74] Illich, *Tools for Conviviality*.
[75] Schneider et al., "Empowerment in HCI - A Survey and Framework."

Examples of convivial tools can range from simple hand tools to open-source technologies and even social structures that encourage participation and collaboration. Illich[76] argued that by prioritizing conviviality societies can create environments that foster individual well-being and social harmony.

In essence it is the concept of tools for conviviality that shifts the focus from technological systems that control and dominate to those that empower individuals and build stronger communities. It is about going against the current paradigms in industrial design and production.

### Arts and Crafts to Maker Culture

It is not a new thing that we want to rage against the machine. Quite some time before the degrowth movement Karl Marx argued that bourgeoisie, the class that owns means of production, dictates the rules[77]. And what do we actually mean by means of production?

Karl Marx defined them in The Capital as: “all of the physical and abstract elements, aside from people, that go into producing goods and services. These include knowledge, tools, natural resources and distribution systems, such as shops and the internet”

Want to cut out of the system and return to the roots? Or maybe try a different approach to dismantle consumerism capitalism? There are many movements that tried or are actively trying to do so. One of the ways to subvert the current systems of power is for the workers to take production into their own hands. Moreover, it is not a novel ideal, some of the modern movements that encouraged creativity can be traced back to the 19th century.

Arts and Crafts Movement[78] in the 1880s, which pushed back against soulless industrialization by celebrating handcraft and integrity in making. Bauhaus in the early 20th century[79] sought to democratize design, merging craft and utility to make creative education more inclusive. Punk subcultures[80] used xero and zines to share radical ideas, showing that media production could exist outside mainstream systems.

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[76] Illich, *Tools for Conviviality*.
[77] Watkins, *Consumer Capitalism*.
[78] Cumming and Kaplan, *The Arts and Crafts Movement*.
[79] Forgács, *The Bauhaus Idea and Bauhaus Politics*.
[80] McKay, “Was Punk DIY?”

In parallel anarchists, hippies and other grassroots[81] initiatives co-created blueprints; from squats[82] and tool libraries[83] to free kitchens, houses[84] by producing knowledge commons[85]. Their actions were not just political or artistic - they were practical and creative.

Do It Yourself is focused on people making something themselves (as the name suggests) as opposed to it being made for us. The people involved in DIY practices prefer moving independently, being proactive, creating products for home or parties for local communities, communal gardens or cooperatives operating on the outskirts of capitalist markets.

These lineages form the **ideological and methodological backbone that empower** people to live in opposition to extractive, consumerist systems. Today, **degrowth thinking**[86], **maker culture**[87] or perma-computing[88] call for more than just green tech - they demand new **rituals of care, shared knowledge**, and **slow, intentional making** in order to create a more generous world.[89]

Finding a small niche of people that will want to make something themselves is easier when you have a whole world to look for them. With the power of the internet, which gives us a more interconnected world, those ideas can be remixed and continue to shift power from centralized corporations to communities.

With the rise of digital tools hacker culture gained popularity for exploiting vulnerabilities of the corporate information systems[90]. But hacking itself is more of creative tinkering[91] with its roots laid in freedom and

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[81] *Grassroots Innovation Movements*.
[82] *Cracking the Movement*.
[83] Robison and Shedd, *Audio Recorders to Zucchini Seeds*.
[84] "WikiHouse."
[85] Dellenbaugh-Losse et al., *The Urban Commons Cookbook*.
[86] Nesterova, *Degrowth, Depth and Hope in Sustainable Business*.
[87] Lim, *Landscapes of Participatory Making, Modding and Hacking*.
[88] "Permacomputing."
[89] Strickler, *This Could Be Our Future*.
[90] Erickson, *Hacking*.
[91] Varela, "Hacking and Rehearsing."

openness similar to FOSS [92].Hackers values have been later adopted by the **Maker Movement**[93] bringing the ethos of hacking from code to physical products and machines. The maker culture has received attention for its potential to democratize innovation through community-based learning and local production[94]. Tangentially there are organisations working within different sectors such as product design (distributed design)[95] , entrepreneurship (Open Innovation)[96] or financial technology (blockchain, crypto)[97] that try to open up certain sectors, branches or products. Many products have been designed in a way for other makers to replicate, notably self replicating 3d-printers such as RepRep[98]. Growing the net of makerspaces and fablabs which are in theory open spaces that anyone can use to produce locally.

### What is access?

In practice a lot of makerspace require memberships and some of the designs and communities are made mainly for designers, which makes them available solely to certain groups. Harrington et al. (2019)[99] and Das et al. (2020)[100] note that many maker spaces cater to technically skilled, often male-dominated user groups, and may not provide adequate support for diverse participation. That is why it has been critiqued for its limited access. To address this, more inclusive approaches to distributed design have been proposed. These include focusing on care-based making[101], offering alternative entry points for non-experts, and designing tools that are flexible, scaffolded, and low-cost[102].

Historically, movements with democratic ideals have sometimes struggled because access was uneven. The Arts and Craft movement proved to produce expensive objects only available to the elite. The Bauhaus, while visionary in democratizing design education, was still primarily accessible to a select,

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[92] Barnes, “Hacker Culture (Review).”
[93] Davies, *Hackerspaces*.
[94] Sheridan et al., “Learning in the Making.”
[95] Armstrong, “Distributed Design: A Platform Approach Towards More Inclusive, Plural Futures for Design.”
[96] Ramírez-Montoya and García-Peñalvo, “Co-creation and open innovation.”
[97] Chen, “Blockchain Tokens and the Potential Democratization of Entrepreneurship and Innovation.”
[98] Piller et al., *Handbook of Research in Mass Customization and Personalization*.
[99] Harrington et al., “Deconstructing Community-Based Collaborative Design.”
[100] Logas et al., “Tensions between Access and Control in Makerspaces.”
[101] Rosner, *Critical Fabulations*.
[102] Jull et al., “Community-Based Participatory Research and Integrated Knowledge Translation.”

educated elite while its design was not appealing to the public. The Maker Movement, though fueled by an ethos of openness, has been critiqued for catering largely to technically skilled, predominantly male participants[103][104]. This reveals a recurring tension: tools and spaces that claim openness but remain **socially gated** through norms, language or infrastructure.

If we want to truly democratize creativity, it is important to build systems that provide access for a diverse range of groups and needs[105]. Not only that the spaces should be **physically accessible** to people regardless of mobility, geography, or socio-economic status, but they should also be **cognitively, culturally, and socially accessible**. Access is not only a matter of *entry* but of *participation* - the ability to meaningfully engage without prohibitive skill requirements, insider knowledge, or financial barriers [106] [107]. We have all the tools for regenerative creativity, it is just a matter of democratizing technology for people to enjoy it and express themselves[108].

## 2.3 Trust, Transparency and Multimodality

Even if a space, tool, or guide is physically and technically accessible, people will not engage if they do not trust the system, its creators, or its outputs [109]. This is particularly critical in digital environments where information quality and authorship are not always clear. If users fear misinformation, bias, or hidden agendas, access becomes meaningless - they may have the *ability* to enter, but no *willingness* to act[110] [111].

In complex or automated systems, **trust** plays a central role in whether users rely on and act upon digital guidance. Several studies suggest that transparency is a key factor in trust-building, which might be

[103] Harrington et al., “Deconstructing Community-Based Collaborative Design.”
[104] Logas et al., “Tensions between Access and Control in Makerspaces.”
[105] Smith et al., “Grassroots Digital Fabrication and Makerspaces.”
[106] Lawrence, “Institutional Strategy.”
[107] Rogers et al., “Diffusion of Innovations 1.”
[108] Tanenbaum et al., “Democratizing Technology.”
[109] Lee and See, “Trust in Automation.”
[110] Budak et al., “Misunderstanding the Harms of Online Misinformation.”
[111] Wu et al., *Negotiating the Shared Agency between Humans & AI in the Recommender System*.

especially true when AI or algorithmic components are involved[112] [113]. Neural Networks happen to have parts hidden from humans by design. Explainable AI (XAI) refers to design approaches that make machine reasoning visible and understandable[114].

### Transparency and User Sovereignty

Transparency - in how a system works, where its content comes from, and who maintains it - gives users the context they need to judge the credibility and adapt tools to their needs[115][116] . Without transparency, entry points can become opaque and intimidating, creating *perceived barriers* even when technical access is present. For example, open-source software may be free to use, but if its workings are hidden in overly complex documentation, only the already-skilled can fully participate.

Accessibility can be thus defined as the ease at which we can achieve a given task(based on Oxford Dictionary of English Definition)[117]. However, it can also manifest as a quality of the experience that we have and can include our preferred medium or modality[118]

### Media, Trust, and Platform Fatigue

The media's function is to carry messages. Currently for some (or the majority of) users the easiest way to obtain information is through social media. Though when algorithmic platforms distort intent and overload users with noise, their **epistemic trust** erodes[119].For that reason, **small-scale, human-centered platforms** that are legible and locally governed are gaining appeal. Many are now returning to **slow**

[112] Felzmann et al., “Transparency You Can Trust.”
[113] Budak et al., “Misunderstanding the Harms of Online Misinformation.”
[114] Sokol and Flach, “Explainability Fact Sheets.”
[115] Felzmann et al., “Transparency You Can Trust.”
[116] van Abel, *Open Design*.
[117] Stevenson, *Oxford Dictionary of English*.
[118] Lawrence, “Institutional Strategy.”
[119] Marková, “Epistemic Trust and Authority.”

**media**, zines, or offline rituals of making. Trust in large platforms (Google, TikTok, Meta) is declining, especially among the youth[120] it also decreases when they discover AI is involved in given product[121].

Transparency is not only essential for trust but also the key to user autonomy. Products and services that are documented, explained, and open-sourced help users gain **sovereignty over tools**, not dependence on producers.Providing clear documentation (manuals, open blueprints, recipes, guides) invites community participation. For example Open!Next[122] initiative encourages businesses to disclose part of their operations to build trust and allow for remixing, adaptation, and local use. This is non zero-sum: openness can benefit both designers and users by creating **engaged communities**, reducing support needs, and fostering long-term loyalty[123]. Technology can provide affordances for transparency. In the interconnected world we can control sources of information and versioning.

### Legibility, However, not all transparency improves trust.

Legibility - the quality of being clear enough - is a core value of accessible design[124]. Systems must be legible to remain democratic and empowering. When users can read and interpret a system, they can also repair, contribute to, or challenge it. This is critical for empowerment in a post-consumerist digital space as well as physical products. Kulesza et al. [125] show that explanations must be relevant to the user's task and mental model. The amount of information that comes with transparent practices might be overwhelming for the user since a large amount of information carries a big cognitive load[126]. This is what happens when we are asked to accept the terms and conditions or contracts. Have you ever read them?

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[120] "Research Brief: Teens, Trust, and Technology in the Age of AI | Common Sense Media."
[121] Cicek et al., "Adverse Impacts of Revealing the Presence of 'Artificial Intelligence (AI)' Technology in Product and Service Descriptions on Purchase Intentions."
[122] "OPEN!NEXT - Transforming Collaborative Product Creation."
[123] "Open Source: Giving Your Product Away Is the Best Idea You've Never Had."
[124] Bridle, *Ways of Being*.
[125] Kulesza et al., "Too Much, Too Little, or Just Right?"
[126] Rossi and Lenzini, "Transparency by Design in Data-Informed Research."

The sheer amount of text makes us not want to read any of it and just accept it blindly[127]. For a lot of services online it would take an average person more than two hours to go through them[128].

If we want to design truly accessible communication we must provide users with the right amount of information or a summary; keeping the details easily obtainable if needed.

### Progressive Disclosure

Progressive disclosure is a widely supported design pattern in Human Computer Interaction that reduces cognitive overload by revealing complexity only as needed[129]. The principle is especially useful in guide systems that aim to serve both novices and advanced users . These kinds of products can provide low entry barriers while still offering deep advanced features.  Embedding **progressive disclosure principles** helps to manage cognitive load[130]. Designs that follow a **low-floor/high-ceiling** model-originally proposed in educational technology are those that are easy to begin using but allow for depth and complexity over time[131].

One of the ways to make such flexible adaptive content would be to use stretch text that we can expand to accommodate for the amount of detail that we need. This idea was introduced a long time ago by hypertext inventor Ted Nelson and described in 1974 Computer Lib[132]. The author has prototyped systems that involved this technique but they never broke into the mainstream. With today's technology and computation power it is more than possible. Notably chatGPT has adopted the window where one can adapt length and tone of the text.  Yet, in knowledge-sharing environments one of the factors that influence credibility is the source of information - whether it comes from an expert, peer, or maybe it is generated.

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[127] Passera and Haapio, “Transforming Contracts from Legal Rules to User-Centered Communication Tools.”
[128] “A Policy Length Analysis for 70 Digital Services - The Biggest Lie on the Internet.”
[129] Tidwell, *Designing Interfaces*.
[130] Sokol and Flach, “One Explanation Does Not Fit All.”
[131] Papert, *Mindstorms*.
[132] Nelson, *Computer Lib*.

### Multimodality

Digital tools offer opportunities to broaden participation, but they can also reproduce exclusionary patterns if not designed for **multiple literacies, learning curves, and modalities**[133]. In practice, accessibility in community-based making means designing *entry points* that are low-barrier and culturally relevant, while allowing for progressive skill-building - ensuring that beginners, experts, and everyone in-between can see themselves as rightful participants.

To be even more inclusive we should also think about users preferences in the case of source, modality, access or even style. Multimodality refers to the use of multiple forms of representation such as text, image, audio, and video to communicate information. Research in learning sciences and HCI suggests that multimodal interfaces can increase comprehension, accommodate different learning styles, and improve accessibility for users with diverse needs[134]

Digital guides that allow users to switch between modes or offer layered access to content are more likely to support inclusive engagement. This is particularly relevant in contexts where language barriers, neurodiversity, or physical impairments affect how users consume and act on instructions[135]

## 2.4 Synthesis: From Theory to Research

This section brings together three theoretical strands - Knowledge Sharing & Media Evolution; Conviviality, Degrowth & Maker Culture; and Trust, Transparency & Multimodality - to better the understanding of their intersection. Each addresses a different but interdependent dimension of designing regenerative guide systems: the affordances of knowledge media, the value framework for sustainable and accessible making, and the interaction design principles that build usability and trust. Their intersections shape the main research question-How can digital guides prompt regenerative practices? - and correspond to the scope of the sub-questions, which explore activation, autonomy, accessibility, co-creation, and the evolution of community knowledge.

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[133] Selwyn, *Is Technology Good for Education?*

[134] Jewitt, “Multimodality and Literacy in School Classrooms.”

[135] Oviatt, “Ten Myths of Multimodal Interaction.”

The three areas outlined above form the foundation for this thesis:

- **Knowledge Sharing & Media Evolution** (2.1) explains how information systems have evolved. Informs how guides, as a medium, can adapt affordances from historical and emerging communication systems to balance analog and digital strengths. This underpins the base of the research thus RQ1 (media as tool for knowledge sharing) and SQ1 (balancing agency with autonomy).

- **Conviviality, Degrowth & Maker Culture** (2.2) provides the value framework - positioning guides as tools that enable accessible, adaptable, and ecologically mindful making. This connects most directly to SQ3 (multimodal assistive tech) and SQ4 (community knowledge evolution).

- **Trust, Transparency & Multimodality** (2.3) addresses the interaction design and social dimensions that can make guide systems usable, trustworthy, and inclusive. it is essential for SQ1 (guidance/autonomy), SQ2 (hybrid human/AI trust), and SQ3.

*How can digital guides prompt regenerative practices?* (RQ1)

Activation & Engagement (SQ1)

How can digital guides prompt meaningful user action rather than passive consumption?

Accessibility & Agency (SQ2)

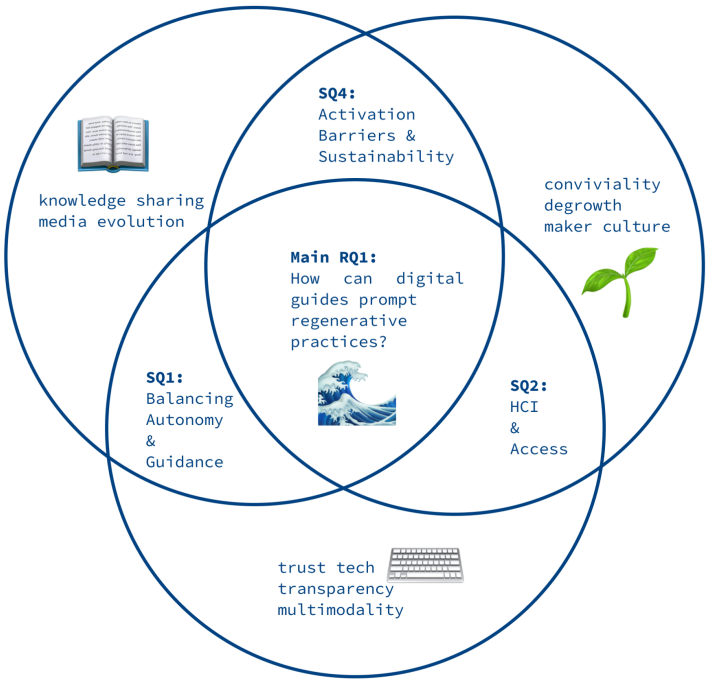
How can interfaces balance low barriers to entry with creative potential (low-floor/high-ceiling design)?

Role of AI & Emerging Tech (SQ3)

In what ways can AI, AR, and semantic principles augment user trust, accessibility, and agency?

Knowledge Structure & Co-Creation (SQ4)

How can a knowledge system support both structured guidance and open-ended co-creation?




intersection of the research areas presented as Vann diagram (fig. 3)

The **overlap** between these areas is where regenerative guide systems can be designed (fig.3):

- **RQ1 & SQ4** emerge at the intersection of **Knowledge Sharing** and **Conviviality** - focusing on activation, barriers, and ecological connection.
- **SQ1** connects **Knowledge Sharing** and **Trust**, addressing structure vs. freedom.
- **SQ2** bridges **Trust** and **Conviviality**, looking at human-AI collaboration for accessibility.
- **SQ3** spans all three, integrating progressive disclosure, multimodality, and co-creation.

# Chapter 3: Methodology

The research design used to develop and evaluate a digital guide system was aimed at supporting sustainable, accessible, and action-oriented knowledge sharing. The methodology combines human-centered design, iterative prototyping, and mixed-method evaluation, rooted in the theoretical principles outlined in the previous chapter.

At the highest level, the theoretical flow of methodology can be seen as:

Media Evolution → Convivial Tools → Regenerative Guide Systems

Where:

1. **Media Environment Evolution** - understanding past and present modes of sharing knowledge.
2. **Convivial Tools** - applying values of accessibility, adaptability, and ecological care to design.
3. **Regenerative Guide Systems** - the applied synthesis: guides that prompt sustainable creativity and community action.


flow diagram of the methodology approach (fig. 4)

## 3.1 Research Through Design Approach

This thesis besides laying a theoretical framework will apply a **Research through Design (RtD)** methodology[136]. to explore the intersection of **digital knowledge systems, sustainable action, and creative empowerment**. RtD is especially suited for speculative, future-oriented, and participatory design practices where problems and solutions co-evolve[137]. Instead of isolating variables, RtD allows for iterative **prototyping, testing, and reflecting in context**[138]. It makes it compatible with the hands-on ethos of DIY and maker cultures which value **hands-on learning, knowledge sharing, and accessible production**[139]

### Regenerative Design Through Participation

A **Research through Design (RtD)** approach combined **iterative prototyping**, **mixed methods** (qualitative + quantitative), and **festival-based field testing**.

The work unfolded in three main phases:

1. **Pre-fieldwork preparation** (literature review, initial prototypes, tools)
2. **In-situ testing in Circular Lab at Roskilde Festival** (daily iteration over 5 days)
   **Post-fieldwork analysis and synthesis** (coding, interpretation, design implications)

This approach was chosen as we are investigating an open research question centered around design with a broad and subjective goal of prompting regenerative practice.Rather than beginning with rigid hypotheses or quantitative measurement, the research is driven by iterative prototyping, situated testing, and embodied engagement-especially with users engaged in creative action. It revolves around 1 central research(RQ1) question and tries to answer it with the help of supporting questions(SQ1-4).

All of that is supporting the main purpose of prompting regeneration through guides?

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[136] Zimmerman et al., “Research through Design as a Method for Interaction Design Research in HCI.”
[137] Stolterman and Wiberg, “Concept-Driven Interaction Design Research.”
[138] Godin and Zahedi, “Aspects of Research through Design.”
[139] Dougherty, “The Maker Movement.”

## 3.2 Phase-1 – Preparation and Initial Prototypes

- **Theoretical grounding** - Synthesized literature on knowledge sharing, conviviality, trust, multimodality to define design principles.

- **Research questions & objectives** - Defined main and sub-questions (RQ1-RQ5).

- **Design goals** - Low-barrier entry, progressive disclosure, hybrid analog-digital, trust and transparency, community input.

- **Prototype concepts** - Developed three low-fidelity prototype families:

    1. **Guide Maker** - modular, semantically tagged guide-creation environment
    2. **Guide Explorer** - step-by-step user interface for following guides
    3. **Physical artifacts** - physical “How Regenerative Are You?” survey
    4. **Workshop formats -** zines, notebook-making, sewing from upcycled fabrics

- **Pilot testing** - Informal feedback from a small group of makers and designers to ensure clarity and feasibility of festival activities.


pilot testing and refinement (fig. 5)

## 3.3 Phase-2 Data Collection in the wild

**Duration:** 5 consecutive days in Circular Lab at Roskilde Festival in Denmark.

**Participants:** Festival-goers; self-selected; 20 survey completions + ~40 semi-interview questions.

**Approach:** Rapid prototyping products & questions inspired **design sprints**. Each day informed the next.

Daily cycle:

1. **Setup:** Display prototypes and activities at the stall.
2. **Engagement:** Invite visitors to participate in:
    - Playful magnet-based survey
    - Semi-structured interviews (linked to one RQ per day)
    - Hands-on workshops (notebook making, DIY tools, material reuse)
    - Prototype trials (Guide Maker, Guide Explorer)
3. **Data collection:**
    - **Quantitative:** Magnet tally surveys + digital survey copies
    - **Qualitative:** Interview notes, facilitator observations, photos of artifacts
4. **Reflection & iteration:**
    - Team debrief each evening
    - Rapid prototype changes (format tweaks, content reordering, workshop adjustments)
    - Bayesian-inspired update of focus for the next day

Chronological outline of daily focus:

- **Day 0:** Gathering initial interest, ideas and inviting to workshops
- **Day 1:** Make boxes from A3, invite people remix and find purpose for it
- **Day 2:** Test modality preferences, places where people look for recipes
- **Day 3:** Explore trust in AI and source credibility
- **Day 4:** Test modularity & remix features
- **Day 5:** Consolidation, open co-creation, and feedback



testing site and stand inside the circular lab (fig. 6)

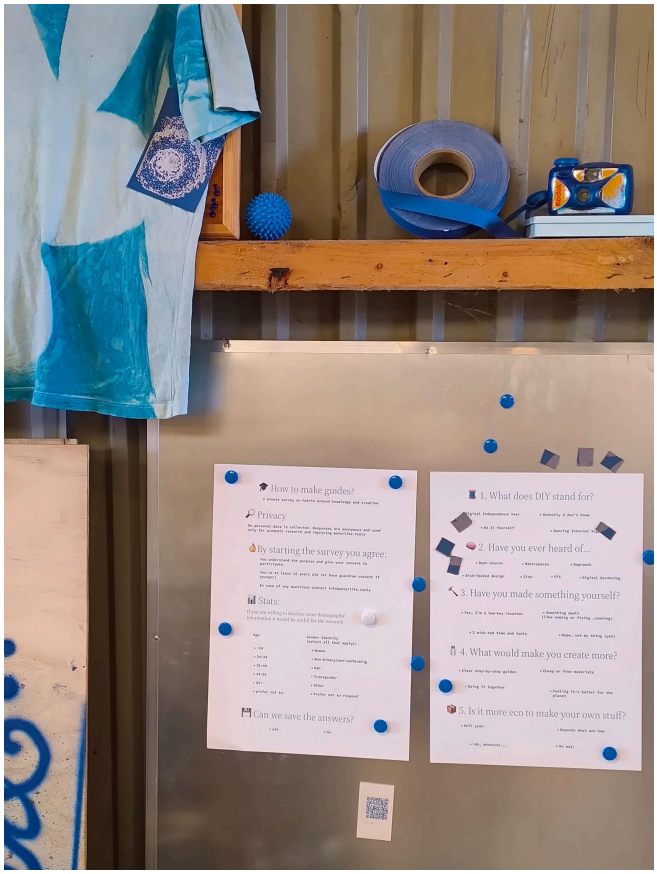
### Survey

In order to gather qualitative data in a festive setting we prepared a playful survey. Besides gathering data it was there to prompt conversation, idea generation and lead towards semi structured interviews.

The questions were designed to be mapped to research questions.

## Survey Questions Meaning Mapping to RQ and SQ (table 1)

| # | Survey Question | Research Purpose | Related Research Question |
|---|---|---|---|
| 1 | What does DIY stand for? | Baseline knowledge check | Conversation Starter |
| 2 | Have you ever heard of… (Open source, Makerspaces, etc.) | Awareness of regenerative/commons-oriented systems | RQ1, SQ5 |
| 3 | Have you made something yourself this year? | Actual DIY engagement level | SQ1 |
| 4 | What would make you more likely to make something at home? | Barriers/motivators for sustainable action | RQ1, SQ2 |
| 5 | Is it more eco to make your own stuff? | Perception of sustainability in DIY | RQ1 |
| 6 | Which of these matter when you buy something? (Local, recycled, etc.) | Consumer values: ethics, environment, economy | RQ1 |
| 7 | What's a wiki? | Knowledge system literacy | SQ3, SQ4 |
| 8 | How would you prefer to get instructions? | Preferred modality | SQ3 |
| 9 | Would you trust a guide made by AI? | Trust in AI guidance | SQ2 |
| 10 | Would you like an app for that? | Desired features for digital augmentation | SQ2, SQ4 |



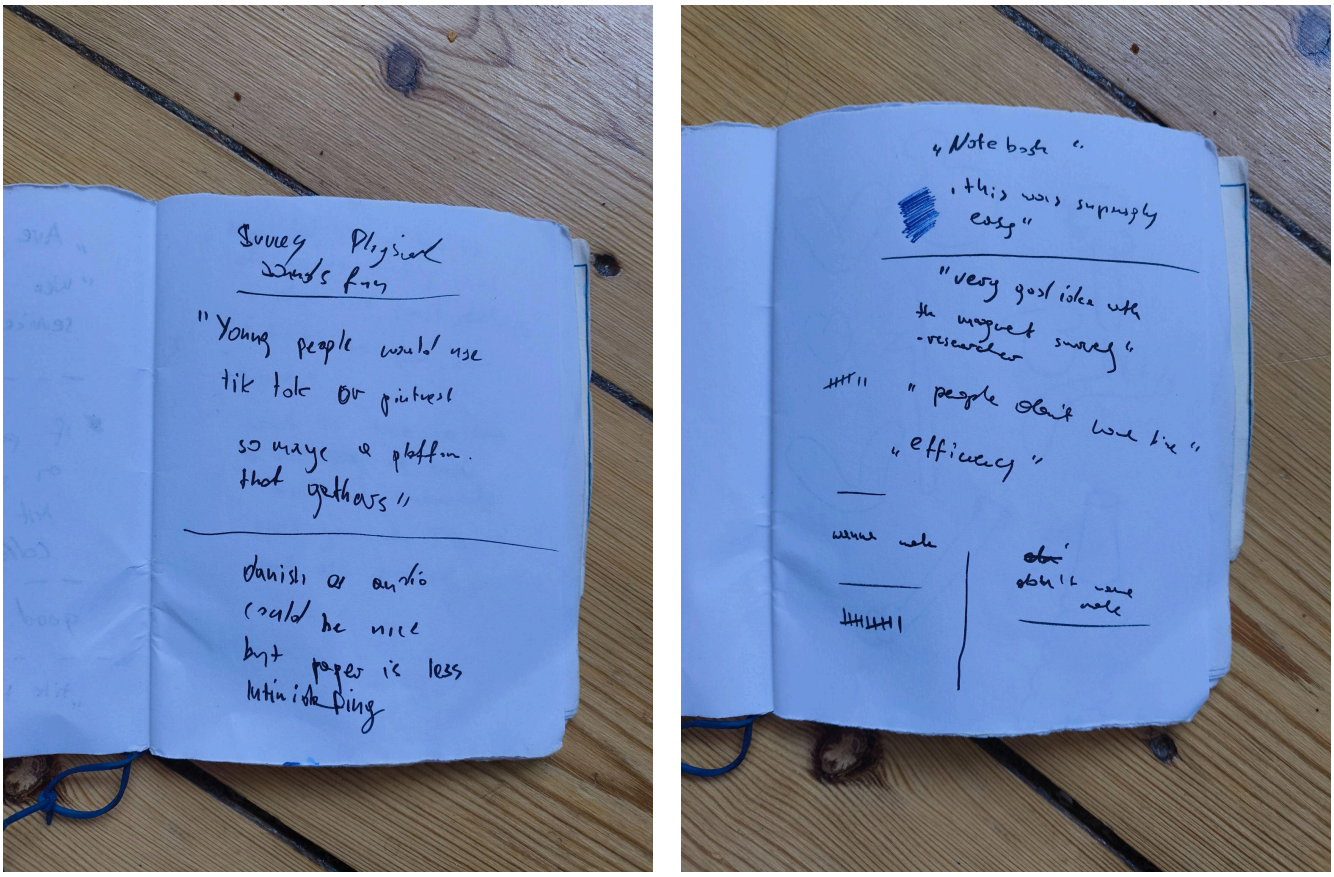

physical survey with magnets (fig. 7)

### Semi-Structured Interviews

Seemingly loose questions designed around research questions to support the thesis main focus. They were aimed to provide qualitative data and gain deeper insights from the participants in a non-formal setting. Each day the focus was on a different set of questions.

## Semi-Structured Interview Questions Daily Themes (table 2)

| Day/ Questions | Ask About |
|---|---|
| RQ1 | - What motivates people to act sustainably. Preference for DIY, co-creation, or buying from locals |
| SQ1 | - Confidence with making. Desire to personalize/remix- Preferred detail level |
| SQ2 | - Trust in AI vs. humans. Use of assistive technology. Structured vs. Open learning |
| SQ3 | - Preferred modalities (text, video, audio). Gradual detail, full upfront |
| SQ4 | - Desire to contribute/share improvement. Willingness to remix/feedback |

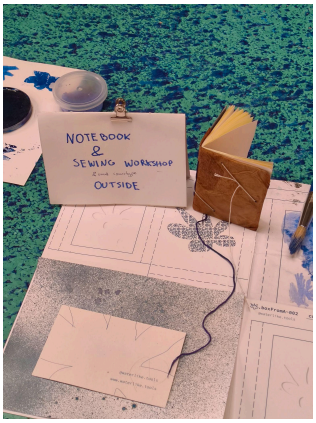



## interview and ethnographic observation notes (fig. 8)

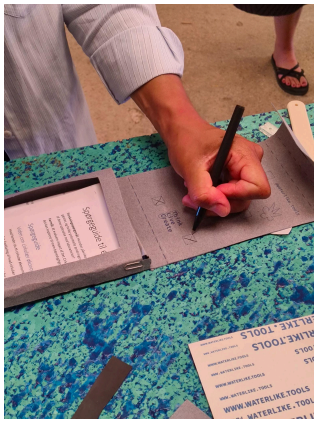
Observation Notes:  We've logged hesitation points, spontaneous usage, observations, comments and ideas. We've logged hesitation points, spontaneous usage, observations, comments and ideas. They were gathered in notebooks or on paper and digitized every evening. They can be indirect citations from specific users or on specific subjects. For example on the right on fig 8 we can see feedback for the box from an  A3 piece of paper  gathered on day 2 of the experiments.

## Participatory prototyping & workshops

Notebook, sewing box-making, stamping, cyanotype and recipe creation workshop aimed at gauging the interests and creativity. Together with the prototype presentations these provided a ground for observation of creative behaviours and what are barriers and affordances to access the creativity.







workshops and some artifacts produced during them (fig. 9)

Prototype Show-and-Tell: Low-fidelity prototype short showcase, workshops, small product, mockups. Besides being a facilitator for observations the workshops left us with artifacts that could be shown to other people. During the span of a few days we created a range of items and we could gather feedback for specific products, categories and materials (ex. homemade glue, cyanotype kit, kombucha-skin cover). These insights on material, technique or product preference  can be helpful in preparing future workshops.

## Individual Methods Short Descriptions (table 3)

| Methods | Description |
|---|---|
| Semi-structured Interviews | aiming at 5-8 conversations each day focused on one research question. Data coded daily. |
| Playful Survey | 10 question quiz with low-barrier responses to a "How Regenerative Are You?" quiz. |
| Observations | In-situ notes from interactions with visitors and workshop participants. Focused on behavior, barriers, and triggers for creativity.Tracking participation rate. |
| Rapid Prototyping | Physical kits, guides, products, processes (binding, sewing, making glue,paint, cyanotype) tested and iterated daily. |
| Workshop Artifacts | The things that users created, what they were interested in at the moment and for the future. Suggestions. |

This approach was at not only what participants say, but what they do, struggle with, and how to adapt.

## 3.4 Phase-3 Data Analysis

### Mixed Methods Design

This study employed a **convergent parallel mixed methods design**[140] to capture both measurable trends and in-depth perspectives on regenerative creativity and guide systems. Quantitative and qualitative data were collected **simultaneously** during the five-day field study at Circular Lab, analyzed separately, and then integrated to produce a comprehensive interpretation. This design was chosen to identify broad patterns through survey data while using interviews and observations to explain the reasoning and context behind those patterns.

### 3.4.A Quantitative Strand

Data source:

- Magnet-tally survey board used on-site (n = 20 participants).
- Identical questions available in digital form for participants who preferred it.

Analysis approach:

1. Responses were entered into a spreadsheet.
2. Descriptive statistics (frequencies, percentages) were calculated for each item.
3. Responses were segmented by self-identified role (e.g., “creative” vs. “non-creative”) to examine potential differences in modality preferences, trust in AI, and willingness to remix.

Purpose:

Identify measurable trends in user preferences and awareness (e.g., preferred guide format, openness to AI, motivations for participation).

[140] Creswell and Plano Clark, *Designing and Conducting Mixed Methods Research*.

### 3.4.B Qualitative Strand

Data source:

- 40+ short semi-structured interviews conducted alongside the survey.
- Facilitator observations and field notes documenting participant behavior and workshop engagement.

Analysis approach:

1. Interview notes were condensed and entered into a coding matrix.
2. **Thematic coding**[141]was used to identify recurring topics such as *time constraints*, *trust in AI*, *material barriers*, *social motivation*, and *modality preference*.
3. Codes were developed inductively and then mapped to the research questions for coherence.

Purpose:
Explore the reasoning, attitudes, and contextual factors behind the quantitative patterns, including nuanced or contradictory perspectives.

### 3.4.C Integration of Findings

After separate analyses, the results were **merged** using a **side-by-side comparison** approach[142]. For each key topic, survey results were compared with interview themes to identify points of **convergence** (agreement), **complementarity** (different but related insights), and **divergence** (contradictory patterns).

#### Analytical Lens: Applying the Matrix of Convivial Technology

The raw insights were analyzed and interpreted using the Matrix of Convivial Technology (MCT) framework[143]to examine each prototype and user interaction through its 5 dimensions and 4 lifecycle levels (materials, production, use, infrastructure). This enables:

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[141] Braun and Clarke, “Using Thematic Analysis in Psychology.”
[142] Creswell and Plano Clark, *Designing and Conducting Mixed Methods Research*.
[143] Vetter, “The Matrix of Convivial Technology - Assessing Technologies for Degrowth.”

- Reflecting on whether the prototypes promoted interdependence or isolation (Relatedness)
- Assessing whether the materials and knowledge were accessible and understandable (Accessibility)
- Seeing how well users could remix or reinterpret the tools (Adaptability)
- Exploring if the tools prompted ecological or sensory connection (Bio-interaction)
- Evaluating if the format was appropriate for time, context, and outcome (Appropriateness)

This matrix was applied both as a self-assessment by the designer (you), and as an interpretive schema to guide evaluation of user feedback and prototype behavior.

## 3.5 Ethical & Practical Considerations

For the survey as well as the interviews we had to gather consent forms.

- **Consent**: One-page opt-in; responses anonymized on collection

included the consent form in the demographic page

- **Demographics**: tried following the guidelines found in the study about inclusive demographics[144]. providing the demographic information was optional but no participant opted out from it.

- **Benefits for participants**: Everyone received an option to take part in hands-on workshop experience and actually make something. Also all the people who wanted to make something were encouraged to do the survey but not all of them were.

[144] Hughes et al., “Inclusive Demographic Questions.”

# Chapter 4. Results

The results presented in this chapter draw from a **convergent parallel mixed methods approach**, combining quantitative survey data and qualitative interview insights collected during the five-day field study at Circular Lab. Data were gathered simultaneously through:

- **A 10-question physical-format survey** displayed on a magnet board, inviting participants to respond quickly and visually while engaging with the research stall. This format was designed to be playful, low-barrier, and to encourage spontaneous participation in a busy festival setting.
- **Semi-structured in-person interviews**, conducted alongside the survey, to capture richer, contextual insights into participant motivations, perceptions, and barriers. Interviews ranged from brief exchanges to more in-depth discussions, often prompted by interaction with prototypes or workshop activities.
- **Ethnographic Observations-** workshop in co-creating knowledge, small products as well as presenting guides and digital prototypes made it possible to observe users in creative scenarios. They provided additional insights with the possibility to react to feedback in real time.

As mentioned before, the  study employed a **Research Through Design (RtD)** methodology[145] [146] using rapid prototyping, informal interviews, and hands-on interaction to explore the design of regenerative knowledge systems. The testing was conducted in **Circular Lab**, a unique context offering a "living laboratory" of festival-goers engaged in sustainability-focused activities.

The questions asked to answer the questions could be updated  which mirrors **rapid prototyping approaches in HCI fieldwork**[147], where insights are refined continuously. It also aligns with **convivial design**. **participatory speculation** and introduces more-than human concerns [148] favoring dialogue and co-creation over extraction.

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[145] Zimmerman et al., "Research through Design as a Method for Interaction Design Research in HCI."
[146] Gaver, "What Should We Expect from Research through Design?"
[147] Millen, "Rapid Ethnography."
[148] Akama et al., "Expanding Participation to Design with More-Than-Human Concerns."

The research embraced an **adaptive, day-by-day focus, the goal was not statistical generalization but qualitative depth**. We tried gathering **rich, situated feedback** in the wild about people's motivations, preferred modalities, trust in systems, and ideas for co-creation . Prototypes, questions and methods were explorative , **low-fi, tangible, and playful**, matching the festival context[149] [150]. (Koskinen et al., 2011; Gaver, 2012).

## 4.1 Results Summary

- **Participants:**
    - Survey: 20 full responses
    - Semi-Structured Interviews: 40+ short-form interviews
    - Observations: Conducted across 5 days
- **Participation Dynamics:**
    - 108 people have been asked to do survey during five days*
      19 out of 22 surveys were completed physically with magnets (rest online)
    - The recruitment rate was 22/108; approximately 20%

note:n = 20 survey and n=10±2 in semi-structured interviews the data satisfies early-phase user testing thresholds [151], allowing for mixed method insights and usability signal emergence.

*data has been recorded by main researcher

[149] Koskinen et al., "Design Research Through Practice."
[150] Gaver, "What Should We Expect from Research through Design?"
[151] Hwang and Salvendy, "Number of People Required for Usability Evaluation."

## 4.2 Survey: "How Regenerative Are You?"

Physical Copy of 🌊 How Regenerative Are You? (Responses)

*The playful survey aimed to explore regenerative engagement, creative confidence, modality preference, and trust in AI in a festival, "wild" setting*

### A. Creative Identity

- "Do you consider yourself creative?"
    - 12/19 (63%) said no
    - Creators: 7/19 (37%) (e.g., "low-key innovator")

### C. Instruction Format

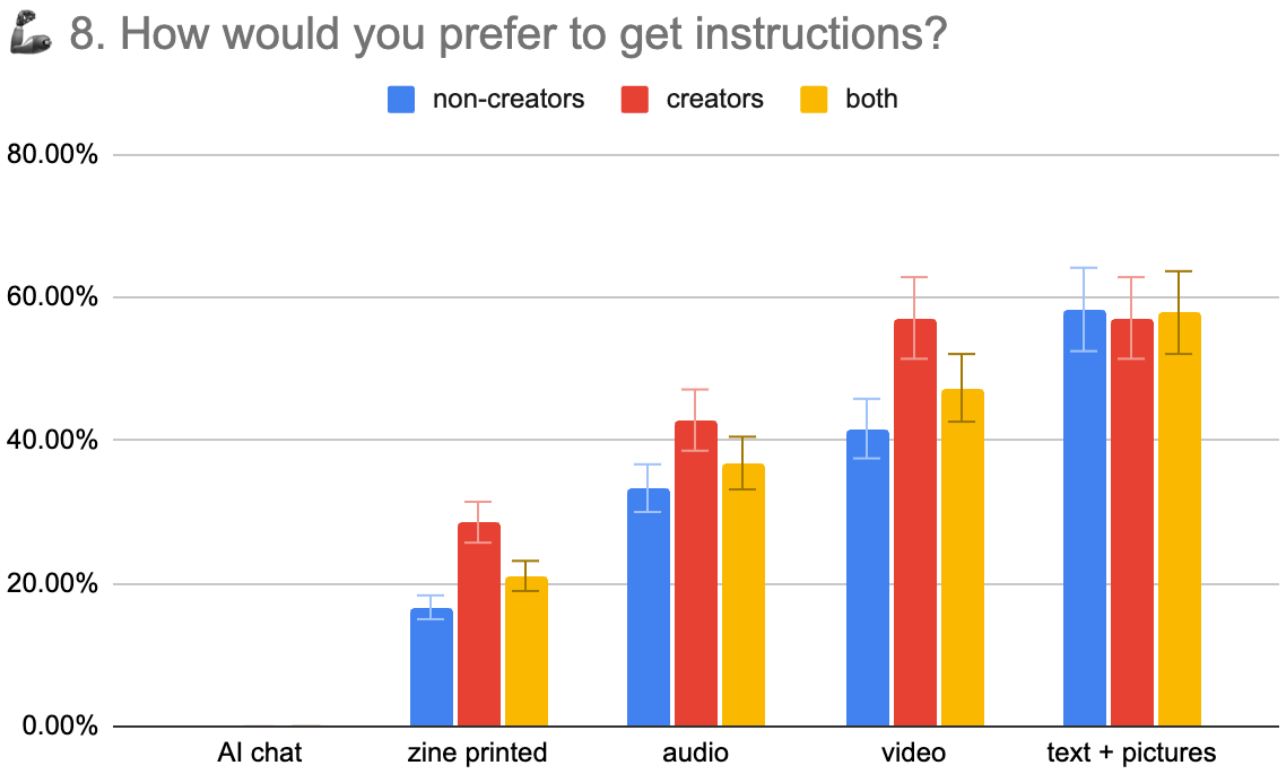
- Instruction Type Preference:
    - Text + Pictures: 11/19 (58%)
    - Physical/Paper: 8/19 (42%)
    - AI chat: 0
    - Video: 3/19 (16%)

- Modality preference by group

Answers between the groups didn't vary significantly. None of the participants expressed preference for a robot or AI chatbot as an instructor.

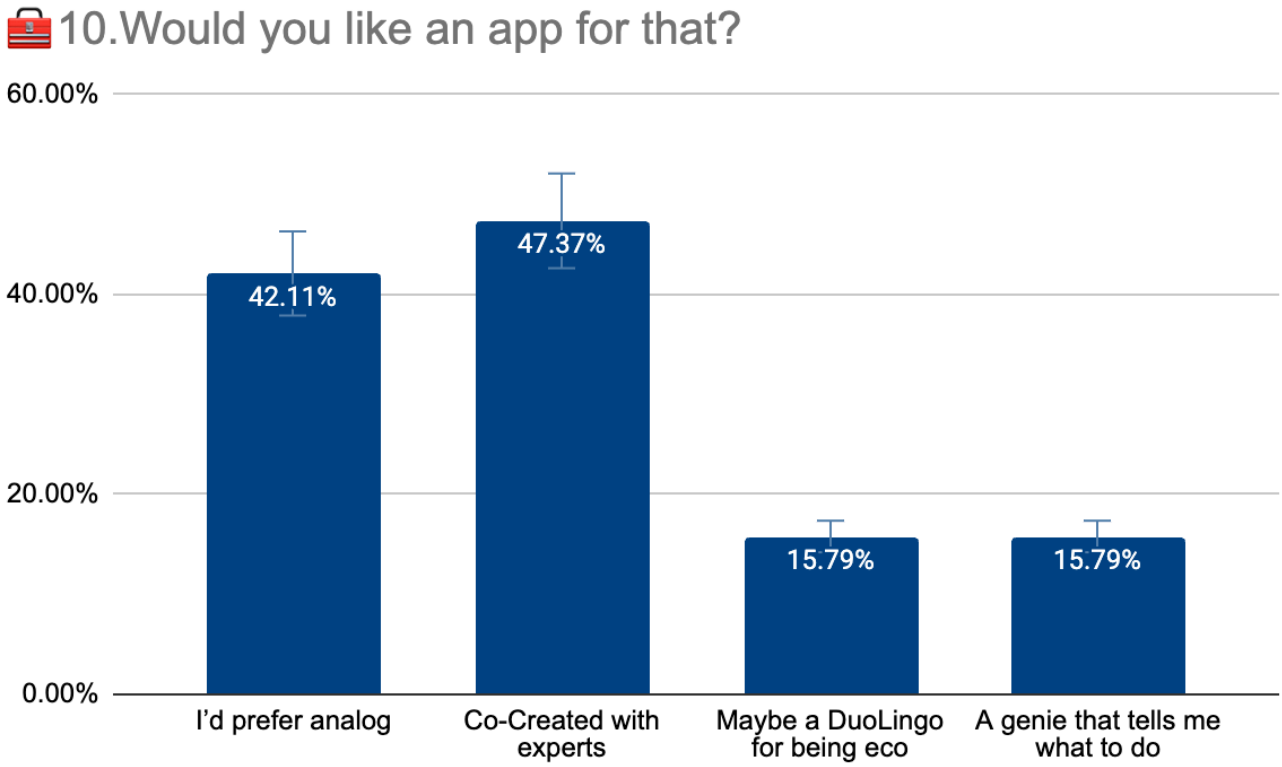
Among self-described creators (n = 7):

- They have slightly higher preference for video and printed content.




column chart with modality preference among survey participants (fig. 10)

- **Potential creativity supporting app functionalities**:
    - Co-created with experts (47%)
    - Analog version (42%)




column chart with a demand or preference on app functionalities(fig. 11)

*term description*: DuoLingo for creativity refers to an app that supports habit formation through motivation and a genie that tells you what to do is a technological(black-box) assistant with knowledge and encouragement- potentially in a form of AI.*

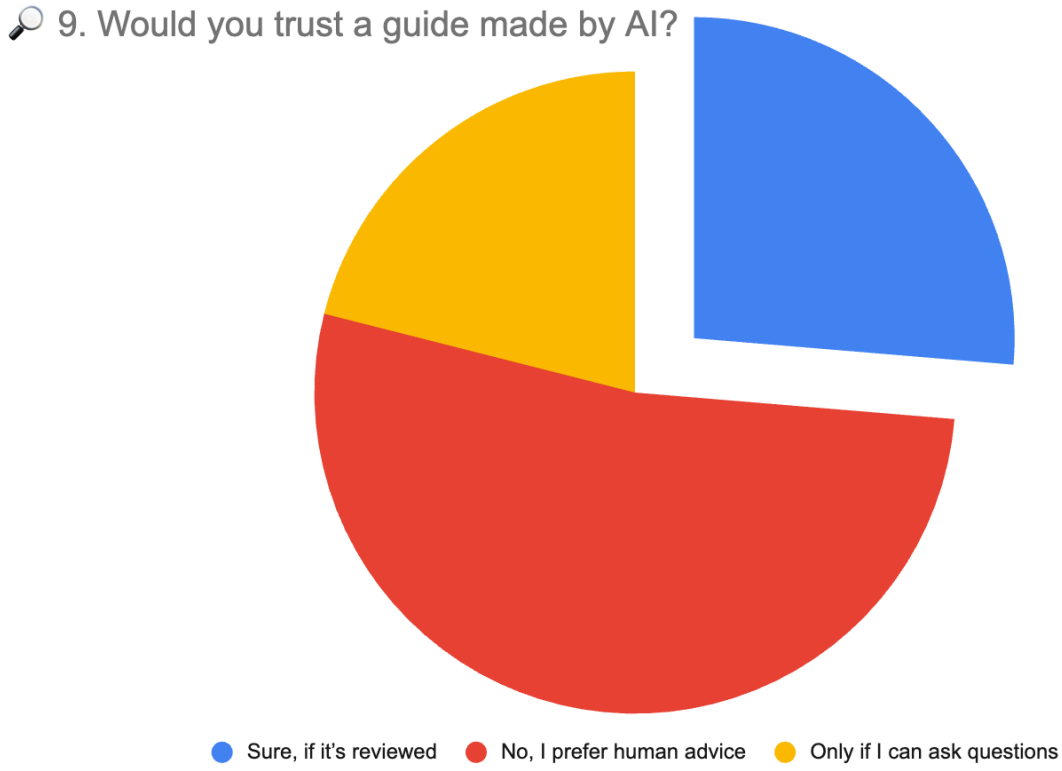
**it was established that participants understood the question as intended through post survey interviews.*

## D. Trust in AI Source

- Would you trust an AI-generated guide?
    - Yes: 3/19

      No or prefer human: 11/19
    - Only if they can ask questions: 5/19

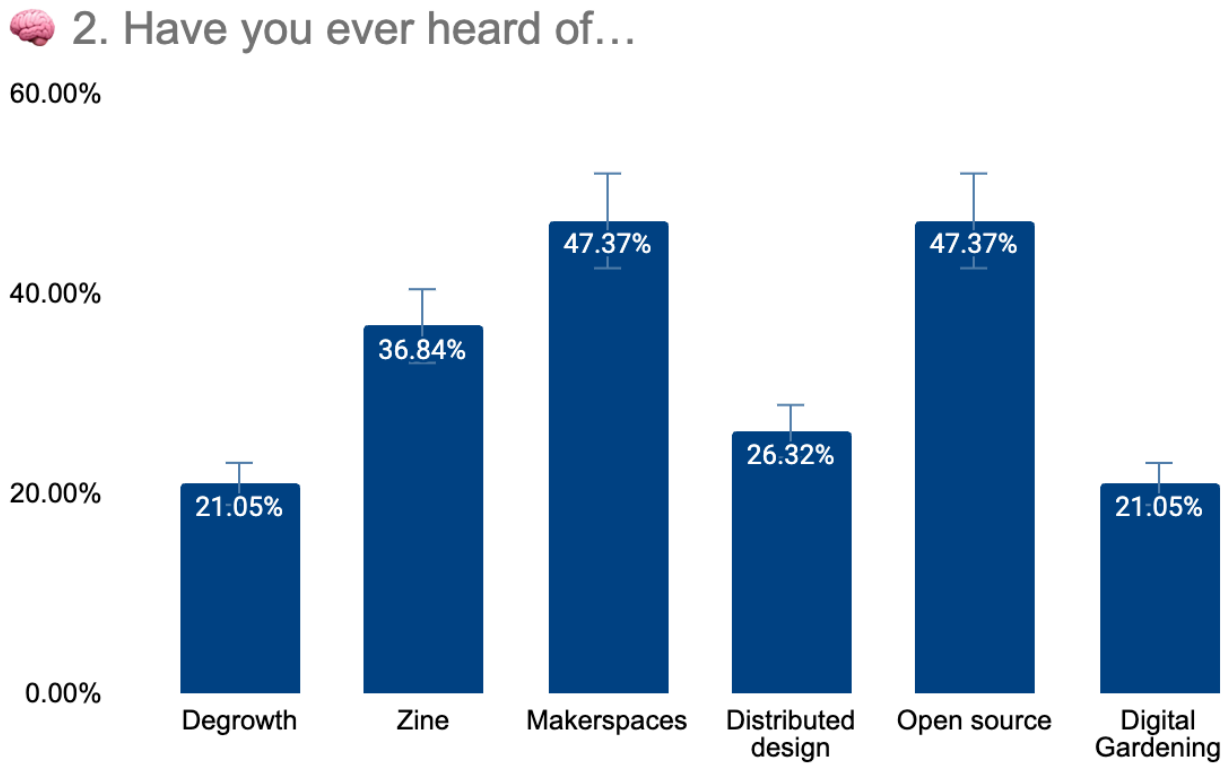
*Quote: "I'd use a chatbot to brainstorm ideas, but I'd rather follow something tested by someone real."*




pie chart with survey participants trust in AI-made guides (fig. 12)

### E. Awareness of Concepts

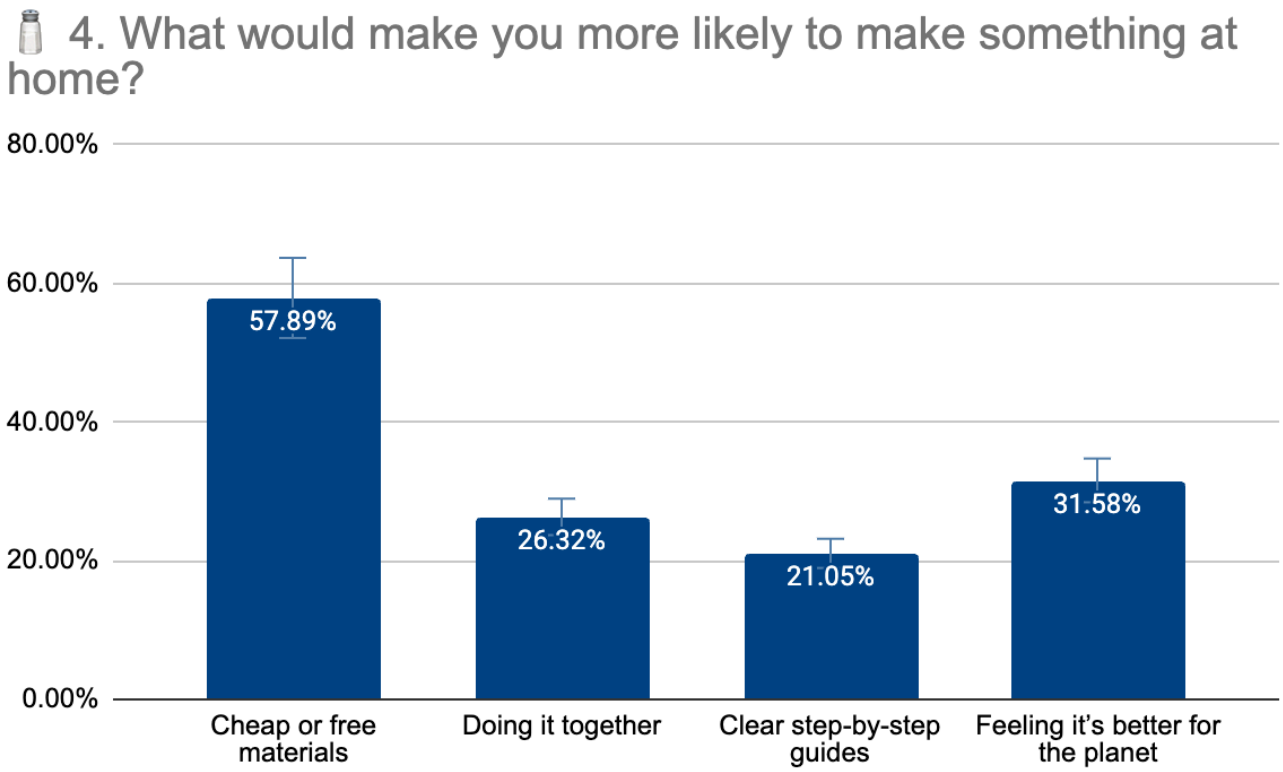
- Term recognition:
    - Degrowth: 3/19
    - Other terms (open-source, distributed design, maker): partially recognized, rarely understood
    - Respondents often "heard of it" but could not explain




column chart with self-assessed terms recognition among survey participants (fig. 13)

### E. Motivators of homemade creativity

- Homemade Creativity affordances:
    - Cheap or free materials would most likely make people to create (58%)
    - The rest of motivations were quite evenly distributed between all participants. In between groups it's worth noting that none of the self-assessed creatives said they wanted clear step-by-step guides




column chart with affordances for more frea creativity at home (fig. 14)

## Comparison of responses by creatives or non-creatives

### A. Guidance Preference by Group

- **Among non-creators** (n = 12):
  Preferred support: human contact or social context
  - 4 (33%) said they would be more likely to act if there were simple step-by-step guides

- **Among self-described creators** (n = 7):
  Preferred open-ended creativity and depth
  - 0 said they would like clear step-by-step instructions

## 4.3 Semi-Structured Interviews

DataCoded Research Questions From Semi-Structured Interviews

*Conducted informally throughout the festival, each interview was guided by 2-3 open-ended questions, probing participant attitudes toward making, learning, and tech-assisted guidance. We aimed to ask the same question to* n=10±2 participants.

### A. Barriers to Regenerative Practice

- Top reasons for not making at home (multi-coded):
    - Time constraints: mentioned by 7+ participants
    - Not feeling creative enough: 5+
    - Lack of materials or tools: 3
    - Feeling overwhelmed: 3 this was the only answer that emerged in open questions and was not available as an option in the survey.

### B. Trust and AI Systems

- Chatbots / AI:
    - Useful for idea generation, not trusted for instruction
    - Preferred roles: “co-pilot” or “sparring partner”
    - Some desired human authorship even in digital guides

### C. Modality & Interaction Preference

- Instruction Format:
    - Most wanted overview first, then details
    - Preferred analog over digital in social/festival setting

    - Want ability to ask questions during process

### D. Activation & Motivation

- Physicality and social context were more effective than tech
- Participants more willing to act when in groups, with a shared purpose
- Events and rituals (weekend projects, collective challenges) felt more motivating than standalone guides

## 4.4 Observational Insights

- Engagement Rate: ~20 visitors per day interacted, 1/5 completed surveys
- Time Sensitivity: Festival timing (11-15:30 opening) limited participation
- Social Context: People were more receptive when in groups or when the activity looked visually engaging (e.g. zine, table, products, workshops)
- Physical Prototyping: Hands-on materials attracted more attention than screens or posters

To complement participant data, observational data was gathered by the main researcher with support from two workshop co-facilitators. Their reflections confirm or extend findings related to trust, making behavior, time constraints, and user motivation.

With **facilitator-side ethnographic observation** on how participants behaved, what worked, and what failed. Their answers highlight **biases**, and **structural constraints** (e.g. time, materials, social norms) They also provided insights about **engagement, activation, embodiment**, and **barriers.**

## Summary of Key Findings (table 4)

| Theme | Key Finding |
|---|---|
| **Creative Confidence** | 63% reported making only small things themselves |
| **AI Trust** | 50% preferred human-created guides; 0 trusted a chatbot alone |
| **Instruction Format** | 58% preferred text + pictures; 42% preferred video |
| **Activation Barriers** | Time (7), Creativity (5), Tools (3) |
| **Preferred Modality** | Paper/zines and group engagement scored highest |
| **Convivial Contexts** | Higher engagement when activities were playful and peer-driven |
| **Openness to Remixing** | Interest increased after hands-on exposure |

# Chapter 5. Discussion

The fieldwork indicates that **guide systems must blend simplicity with meaningful action**. Users showed strong preference for physical, low-barrier activities (folding a zine, using pre-made kits) over pure digital tasks, suggesting that analog media continue to play a vital role in activating users. This resonates with Illich's notion of *convivial tools* - technologies that let individuals "enrich the environment with the fruits of their vision[152]". Digital support should provide just enough structure (an overview, modular steps) to reduce friction but not stifle exploration.

We found that **trust and human touch are paramount**. This aligns with human-computer interaction research: users feel comfortable using generative technology for ideation or quick tips, but expressed need for human validation and presence[153]. In our analysis guides should expose their authorship and sources, and use *assistive technology* (through suggesting ideas, not dictating solutions). Embedding transparency through open-source code and collaborative nature can  further build trust.

In our study participants preferred text-and-image guides (especially on paper) which were rated most engaging, while screen-based videos or advanced multimodal interfaces felt less inviting. This suggests lead with tactile simple formats - zines, printed cards, hands-on workshops - and use digital/AI layers only as optional aids (for accessibility or inspiration). Users expressed a lot of interest in physical forms of guidance and encouragement.  This finding matches prior work on embodied interaction[154] and accessible design[155]: Variety of modality can empower different learners, but should not overwhelm them.

Finally, participants welcomed the community aspects but only under familiar terms. The jargon of "co-creation" or technical buzzwords was off-putting. Simply providing space for making things with other people, being able to ask for help or encouragement when needed was constantly chosen over any digital layer. This reflects in *communities of practice*[156] principle that sharing practical experience (even small tips) feels more natural than formal collaboration.

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[152] Illich, *Tools for Conviviality*.
[153] University of Maryland, College Park and Shneiderman, "Human-Centered Artificial Intelligence."
[154] Dourish, *Where the Action Is*.
[155] Wobbrock et al., "Ability-Based Design."
[156] Wenger-Trayner, *Communities of Practice*.

## Mixed Methods Integration (table 5)

| Theme / RQ Link | Quantitative Finding | Qualitative Theme | Integrated Interpretation |
|---|---|---|---|
| **Preferred Guide Format** (RQ1) | 58% chose "printed text + images" as most useful | Participants described printed guides as "more trustworthy" and "easier to focus on" compared to screens | Strong convergence: physical formats are valued for tangibility, attention, and perceived credibility |
| **Trust in AI for Instruction** (SQ1) | Only 15% expressed high trust in AI-generated guides | Many voiced concerns about accuracy and lack of human oversight; some open to AI if "fact-checked" by humans | Agreement: AI should play a secondary, assistive role with visible human curation |
| **Motivation to Remix / Adapt Guides** (SQ2) | 25% indicated high interest in remixing | Interviews revealed low initial awareness of remixing benefits; interest increased after hands-on demos | Complementarity: interest is latent and grows with exposure to examples |
| **Barriers to Participation** (SQ3) | Time constraints were the most common barrier (65%) | Time scarcity linked to festival setting, daily routines, and lack of quick-start materials | Reinforces need for low-time-commitment entry points into making |
| **Social / Community Aspects** (SQ4) | 70% indicated they would be more likely to participate with friends | Interviews emphasized fun, shared discovery, and peer learning as motivators | Convergence: community-oriented activities increase engagement and retention |

**Design implications:** Synthesize these insights by developing guides that are *modular*, *user-driven*, and *transparent*. For example, a guide might begin as a one-page poster or physical kit, with an accompanying app that only provides more detailed multimodal explanation with sources when requested. Community features (e.g. a "tip gallery") should highlight peer examples first, inviting lightweight contributions. Any AI or advanced feature should wear the mantle of "tool" not "expert" - e.g. an AI-based search that returns user-verified results with clear labels. In sum, guides should embody the values of **knowledge sharing, conviviality, and trust**: they must empower people (not overwhelm them), support communal learning (not passive consumption), and be open and understandable (not black-box).

**Theory alignment:** These findings affirm the theoretical framework. The preference for tangible, slow media echoes Illich's conviviality[157] and Sennett's idea of craft[158] as meaningful engagement. The need for human agency ties back to trust theory [159]and the thesis's emphasis on open, user-driven design. By balancing guidance with autonomy and reinforcing social aspects (communities of practice), the proposed guide system can indeed prompt regenerative creativity and action.

[157] Illich, *Tools for Conviviality*.

[158] Sennett, *The Craftsman*.

[159] Lee and See, "Trust in Automation."

## 5.1 Addressing the Research Questions

Synthesized Findings to Answer RQ and SQs (table 6)

| Research Question | Insight Highlight | Design Implication |
|---|---|---|
| 1. How can digital guides prompt regenerative practices? | Users need low-barrier entry points, preferably physical, playful and social. | Design rituals and zines for weekend making. Add simple, tangible first steps. |
| 2. How to balance guidance and autonomy in interface design? | Preference for overview + progressive steps. Users want to remix when safe. | Modular UI with expandable sections and visible progress. |
| 3. How can AI/AR/semantic systems support trust, access, and agency? | AI accepted only with human validation; chat = ideation, not instruction. | Embed AI as “co-pilot” with expert-curated content and feedback loops. |
| 4. How do multimodal layers and progressive disclosure reduce overload? | Users want to choose how deep to go, and how to consume (paper/audio). | Let users choose their format; show “just enough” first. |
| 5. How to support co-creation and community knowledge evolution? | Users are open to feedback and improvement, but not “co-creation” framing. | Use casual terms (comment, share, remix) and show others’ contributions first. |

## RQ1. How can digital guides prompt regenerative practices?

Key insight: **Activation** is the bottleneck in creativity. The perceived lack of time, materials, and "creative confidence" are primary barriers. Playful, hands-on acts can catalyze reflection and action[160]. Encouragement paired with clear step-by-step overview and help crucial points can reduce friction and support open-ended creativity.

### Encouragement for Activation

People engage when prompts are simple, physical, social, and time-bounded;. It seems like simple instructions lower the barrier to entry and enable more open ended creativity[161]. As seen in our festival testing, even if the instructions are understood easily, a lot of users need encouragement for creation more than anything else. One of the outcomes of the observations might be that the key to activation lies in friendly motivation, support and physical presence.

### implication

Provide micro-guides with pre-made materials or weekend/seasonal rituals with tangible first steps, material lists, and time boxes; pair guides with social reinforcement (peer presence, visible progress). Offer offline toolkits and low-cost alternatives to reduce material barriers. Digital pop-up creation or body-doubling could be helpful as well.

## SQ1. How to balance guidance and autonomy in interface design?

The preference of users seemed analog and simple. **Accessibility** principles suggest leading with high-quality text and images[162]. Participants preferred an overview first, then progressive steps. For those testing the digital prototypes scrolling felt more intuitive than click-to-reveal. Users remix when it feels safe, non-destructive and welcome. Users expressed a need for an overview **before they read the instruction. Scrolling down seemed to be more intuitive** than clicking and revealing more information.

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[160] Sicart (Vila), *Play Matters*.

[161] Norman, *The Design of Everyday Things*.

[162] Wobbrock et al., "Ability-Based Design."

Although theoretically progressive disclosure[163] and multimodal design reduces cognitive overload and increases accessibility.

#### Balancing Guidance and Autonomy (SQ2)

Participants often preferred guides that offered both a clear structure and room for improvisation. This suggests the need for *scaffolded creativity*-systems that support open-ended use while preventing users from getting lost or overwhelmed[164]. It is easier to get started, have fun or even get out of the box if the product or idea is familiar. Maybe playfulness[165]and physical creation can trigger regenerative thinking.

#### implication

Use overview-first scaffolding with modular sections, visible progress, and safe “remix” affordances. Favor scrollable summaries over nested reveals; show “just enough” to start.

### SQ2. How can AI/AR/semantic systems support trust, access, and agency?

Participants' needs vary widely but generally they expressed preference for human personality, ethics, and style in creative contexts; most would not trust fully autonomous AI guides.  AI is welcomed for ideation and convenience when curated by humans and embedded in transparent, expert-verified or local contexts; trust grows with visible human labor and feedback loops[166].

#### Human vs. Machine

While users appreciated the efficiency of chatbots for brainstorming and on-situ instruction or suggestions, they desired human warmth, personality, and shared experience in creative contexts. It supports the idea of *Human-Centered AI*[167], where the goal is augmentation-not replacement. Once again we should look into ways to seamlessly integrate digital layers without interfering with human connection.

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[163] Forsey et al., “Designing for Learnability.”
[164] Resnick et al., *Design Principles for Tools to Support Creative Thinking*.
[165] Sicart (Vila), *Play Matters*.
[166] Eiband et al., “Bringing Transparency Design into Practice.”
[167] Shneiderman, “Human-Centered Artificial Intelligence.”

### Trust and Agency Through Community and Technology

Trust is built not through automation alone, but through human validation, community feedback, and transparency[168]. Some pointed out that they want to see the person behind the instruction know what else they are doing. TThe need for **living documentation systems** (digital gardens). Although users don't know the term it seems like once they understand they appreciate the need for slower, nurturing ways of gathering and sharing information. Maybe they just need to see it done in practice. People mentioned wanting a "book of tutorials" or something "tested, proven."

### implication

Participants used ChatGPT and Social Media, but longed for **tactile, trustworthy and organized or curated** systems[169]. Bridging old (static, printed) and new (generated) modalities is something that is worth exploring[170]. If the system is backed by knowledge-base created by experts and there is an easy way to check for information people might appreciate an assistant and encouragement even if it is not human.
Experiment with the digital garden of knowledge but maybe try a different familiar name.

Treat and frame AI as an assistive technology that helps navigate human made guides and provides accessibility-multimodality layer only if it is needed. It can be seen as a co-pilot that structures, translates, and retrieves content while preserving human authority. Provide expert curation, and community commentary; embed feedback loops and transparency around sources and involve real humans in the process.

Additionally, deeper evaluation of **trust**, **co-ownership**, and **creative agency** in AI-assisted systems and life remains direction on its own as technologies become more embedded in everyday practices and develop at rapid pace.

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[168] Felzmann et al., "Transparency You Can Trust."
[169] Lhowe, "The Revenge of Analog."
[170] Pedrero-Esteban and Barrios-Rubio, "Digital Communication in the Age of Immediacy."

## SQ3. How do multimodal layers and progressive disclosure reduce overload?'

Text + pictures-ideally in **analog form**-were preferred for making. Users reported that they'd rather not use screens for those hands-on rituals. Users didn't seem to choose either depth of the information nor the modality. Progressive disclosure helped less than a concise overview. Embodied, tactile interaction deepens comprehension and activation[171]and multimodality could enhance accessibility without adding complexity[172].

### Analog vs. Digital Modalities

Modality or medium preference emerged: conversation or workshop, text + pictures ideally in analog form, if not video or audio-ideally layered and flexible. Once again it seems like we should focus on quality accessible text and pictures as well as support from inclusive design research. Human interaction, physical workshops and paper-based instruction consistently outperformed screen-based interactions in terms of emotional resonance and participation rate. This mirrors findings in embodied HCI[173] that suggest tactility and presence can deepen comprehension and activation. Some users suggested that when they create they'd rather disconnect from the digital devices[174] [175].

- Participants engaged most when given physical, low-barrier tasks (e.g., folding notebooks).

- Surveys and interviews show preference for paper-based, sensory interaction and quick creative action. They also showed a need for community and encouragement from other people. This was also expressed by the co-facilitators. The presence of other human beings and doing something together seems to help a lot.

[171] Dourish, Where the Action Is.
[172] Forsey et al., "Designing for Learnability."
[173] Dourish, *Where the Action Is*.
[174] Vanden Abeele, "Digital Wellbeing as a Dynamic Construct."
[175] Radtke et al., "Digital Detox."

implication

Lead with a one-screen overview and minimal steps. Treat audio/video/ai as optional accessibility layers rather than parallel, competing streams. Focus on text, pictures, personal rather than technology. Users(people) need and want connection and it helps them to build trust and activate.

There is strong desire for analog, hands-on experiences; many wish they had more time to create.There is interest in tools that bridge the gap between analog and digital worlds. Providing invisible augmentation is a space for further exploration.

### SQ4. How to support co-creation and community knowledge evolution?

People welcome feedback and improvement but are not familiar with the “co-creation” label or related jargon (e.g., degrowth, circularity, modularity ). Everyday language lowers social barriers to contribution.

Sharing knowledge in communal or event-based settings felt intuitive and welcome. Yet except for creators they don’t think they would contribute to knowledge or share creation online. Even those who wanted to **comment, remix, version**, didn’t understand “co-creation” as a term.

A language rooted in **degrowth**, **convivial tools**, and **permaculture principles** or water metaphors translated into user interfaces, experiences resulted in terminology like droplets, gardens, and flows. This was a stylistic choice that might not have been misinterpreted by some users.

Besides that, nurturing community support both online and offline can be a great aggregator of contributions. Taking the feedback, answering or trying to implement it can provide for product-user feedback loops signaling others how their contribution matters. If they can see the fruits of their labour or even other users' labour they feel  welcomed and invited.

implication

Consider using approachable terms (comment, share, remix).  Show previous creations first, and lower the bar for micro-contributions (e.g., quick tips, photos of outcomes).

Importance of social infrastructure  in fostering knowledge commons[176]. Many of the people said that this idea applies a lot to the Danish market where the social and physical infrastructure is in place in the form of cultural houses for example. This might be a challenge but also be an opportunity for other markets that don't have such networks yet.
Platform direction: invite sharing your creation, badges or micro achievements as a form of visible community footprints, user generated content and just encouragement of creation through using social validation.

There is a challenge and opportunity in translating co-creation, degrowth, cooperative, open-source and other quiet specific and new words to everyday terms.

### Segment differences (creatives vs. non-creatives):

Non-creatives more often requested clear step-by-step scaffolds while creatives prioritized low-cost/free materials and autonomy.

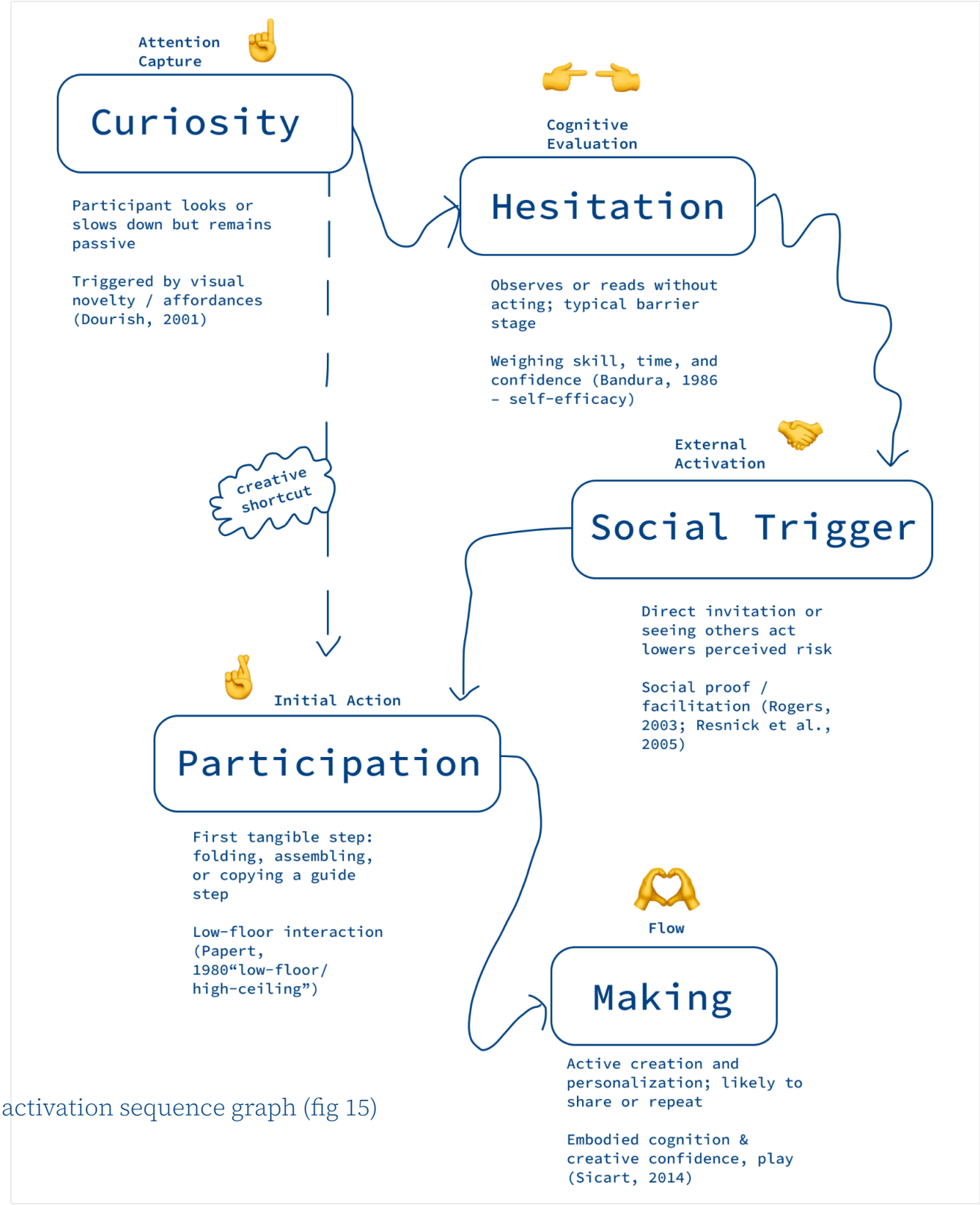
Across groups, **text + pictures** was the preferred modality; most reported **low trust in AI** & especially in fully autonomous ones.

The self assessed creatives usually had no problem starting to engage and make things. They would be more creative if they had time, space and materials for it. Guidance or finding sources doesn't seem to be a problem for them. The barriers to creativity are more physical than intellectual.

Non-creatives on the other hand had a hard time with confidence. They needed a lot more encouragement, non judgemental presence. Even if they were presented with guidance, materials and they seemed to have time and interest  there was still  a sense of hesitation.

The pattern of activation sequence observed between the groups was very similar. Self-assessed creatives only need the right tools, materials and time at their disposal. It seemed like the creatives could take a shortcut and begin creating with no much hesitation nor instruction when presented with these conditions. Non-creatives on the other hand need much more work to go from knowledge to action.

[176] Frischmann, *Governing Knowledge Commons*.




activation sequence graph (fig 15)

## 5.2 Feedback & Reflections

### 5.2.A Key Takeaways

- **Guides can help** in prompting creativity but are more effective if paired with other tools or events.
- Everybody wants something different from the **“platform”** (material, social, info, structure,fun)
- People long for **analog hands-on** experiences and wish they had more time.
- Social **encouragement matters**: people feel more agency when supported by peers.
- Trust increases with transparency, expertise but **also personality.**

### 5.2.B Stakeholder Feedback

- Circular Lab has highlighted the need to test **as much as possible** during these 5 days. This appealed a lot to the experimental approach at watelike.tools and we tried different workshop formats, products, communication styles as well as the digital tools itself. This proved to provide a lot of insights yet also a decent amount of chaos.
- AAU Innovation Hub suggested a more streamlined approach focused on one product as potential for incubation. It is easier to understand when you are trying to **solve one problem**.
- Other makers, business or **potential collaborator**s emphasized the need for local-first meetups and collaborations, spaces that aggregate creativity and expressed willingness to share simplified versions of their products or do workshops together.
- Users and festival goers requested more tactile integration as well as need for physical meetings & spaces for creativity.  Some of them wanted to have dedicated time and place for creativity. They expressed their interest in watching tutorials or **joining events** outside of the festival. The interest in specific formats or product categories varied widely between people. It seemed like a lot of them were paying attention to materials being used. Researchers and Co-Facilitators personal background also seemed to be of interest for them, the motivations behind the project is something that we had to explain frequently. Generally the idea was **well received**.

## 5.3 Additional Prototype Feedback

### 5.3.A Directory (.tools) platform

- Progressive disclosure: Users preferred an upfront overview and minimal "start now" information over deep nesting[177]
- Multimodal blocks: Useful in theory but might increase complexity in practice. Offer alternative modalities as optional layers rather than simultaneous streams.[178]
- Community features: Start with commenting and sharing; leave taxonomy/versioning for advanced users. Collaborate with experts; make safer spaces and let user contribute on clear terms to build trust and connection[179]
- Field feedback: Step-based text + images performed best, especially paired with physical setups and time set aside for making. Consider an online body-doubling when in-person meetings are not possible.

### 5.3.B Guide Maker (physical → digital)

- Value: Bridges analog notes to structured markdown; reduces typing and increases contributions.
- Caution: Avoid imposing rigid documentation standards; a lightweight "recipe" schema is sufficient and convivial.

### 5.3.C Zine Maker (digital → print)

- Value: Meets preference for physical guides; supports offline and e-reader use.
- Trade-off: Static by design; maintain a two-way bridge with Guide Maker to preserve fluidity between analog and digital.

[177] Springer and Whittaker, "Progressive Disclosure."
[178] Goodwin, "Why Multimodality?"
[179] Lansing et al., "Building Trust."

### 5.3.D Media ecologies and guiding systems

- Participants use ChatGPT and social media but seek tactile, trustworthy, and curated systems; many asked for a “book of tutorials” or “tested, proven” content. This supports “living documentation” approaches (e.g., digital gardens) that evolve slowly, visibly and transparently.
- Bridging printed and generated modalities is promising when backed by expert knowledge bases and easy verification. New technologies are useful but users long for the slow and physical forms of knowledge, product, creativity and community building. This opens up room for exploration of more in person meetings as many have expressed interest in a co-creation event outside of the festival setting.

## 5.4 Limitations and Biases in Data Collection

While the field study provided valuable insights, several **biases and limitations** shaped the scope and generalizability of the results. Recognizing these is crucial for framing the findings appropriately and guiding future research design.

#### 5.4.A Contextual Bias - Festival Environment

The data was collected in a **non-neutral, high-stimulation environment**. Circular Lab at is a unique setting where:

- Attendees are primarily there for **entertainment and socializing**, not structured reflection or making.
- **Basic needs like food, sleep, and hygiene** are often prioritized, especially before concerts start.
- The **lab opening hours (11:00-15:30)** coincided with a time of day when many were still recovering from late night. Conversely many of the participants were on vacation so they had more time than usual.

The creative energy and focus for creativity or reflecting on sustainable practices may not represent participants’ behavior in everyday life.

### 5.4.B Sampling Bias - Demographic Skew

- The majority of participants were **under 34**, with many in their 20s.
- This group is typically **more tech-savvy**, open to experimentation, and already familiar with digital guides or AI tools.
- It **underrepresents older users**, families, and individuals with limited access to technology or physical tools.
- During five days 108 people have been asked to participate in a survey and 22 of them agreed. It means that the participation rate was circa 20%. It is relatively modest for an in-person setting but reasonable given the high-distraction, time-limited festival environment.

While this demographic offers useful insight, it doesn't reflect the **full societal spectrum** of potential guide users. Future iterations should include **intergenerational testing** and more diverse socioeconomic groups.

### 5.4.C Temporal Bias - Festival Timing and Duration

- The study was conducted over **five days**, during which **each day focused on a different question** or prototype. Festival-goers often **arrived and left on different days**, so each group had different levels of exposure to prior prototypes or ideas. And although some expressed interest to come back maybe a handful did.
- This meant that some of the methods of the testing that we envisioned were not possible. Rapid iteration meant that findings are **not longitudinal**, and user exposure to changes was inconsistent.
- The Circular Lab itself was situated in the middle of the festival site meaning the physical access to it was limited.

Insights were deep but fragmented-participants did not experience the full evolution of the prototypes, which limits understanding of user retention, long-term trust development or wear-test of the products.

### 5.4.D Self-Selection Bias

- Participants who engaged might have been:
    - Curious, open-minded, or already engaged in sustainable practices as the space they entered was a circular lab after all.
    - Able and willing to spend time talking, suggesting **higher engagement levels** than average.
- Those uninterested in DIY, sustainability, or technology **likely opted out**, even if they represent a crucial part of the general population.

Feedback may skew optimistic. Those with stronger barriers to action (e.g., apathy, skepticism, fatigue) may not be represented.

### 5.4.E Researcher Bias

- Only the surveys and my interviews were data-coded, while two other facilitators led additional workshops and their conversations that weren't transcribed. I only observed the workshop and got their feedback afterwards.
- Observational and informal notes, while valuable, are **subject to interpretation and selective attention**.

Qualitative coding may reflect **my framing or emphasis**, especially in interpreting open-ended answers or assigning meaning to interactions.

### 5.4.F Prototype vs. Reality Bias

- The guides tested were often **low-fidelity prototypes** (e.g., modular cards, zine mockups) or barebones digital prototypes. Some interactions involved **speculative prompts, prototypes** rather than functional products in a real environment.
- User responses may reflect their **imagination or social desirability** rather than real behavior in everyday contexts.
- The playful quiz questions might have skewed the results due to their unserious nature. The indirectness was a strength in this setting but a more structured and direct approach might be needed to clarify the assumptions.

Positive reactions may **overestimate real-world adoption**. More robust usability testing is needed in home or community settings.

### Technology Constraints and Design Trade-offs

The current prototype is limited by technical resources, especially for multimodal accessibility and real-time feedback systems. Balancing flexibility with ease-of-use remains a core challenge.

### Scalability

Expanding the system to support many types of guides or cultural contexts risks overwhelming the interface or fragmenting the community. Although this project is designed to be scaled horizontally, it has to think about the quality. Further iteration will require adaptive UI testing and modular strategies.

# Chapter 6. Conclusion

This thesis investigated **how digital guide systems can spark regenerative creativity** by weaving together principles of knowledge sharing, convivial technology, and trustworthy interaction. Drawing on a festival-based research-through-design study, we developed a prototype *waterlike*.tools (zine and guide-maker) and evaluated it through mixed methods (interviews, surveys, observation).

### Soooo "How can guides support regenerative creativity?" (RQ1)

The findings indicate that guide systems can support regenerative creativity by combining **low-barrier analog formats** with **optional, modular digital layers**. Physical media formats can enhance trust, activation and fun while performing creative tasks, while digital tools can extend these experiences with deeper content, accessibility options, and opportunities for adaptation. Successful systems offer **human touch** and are seamlessly integrated with the experience just like asking a friend if you are doing it right . Trust is reinforced through transparent authorship and visible community input, while conviviality emerges when guides are social, playful, and embedded in shared contexts. Together, these features lower participation barriers, foster creative confidence, and align creative practices with regenerative values.

Reflecting on the theory, our results suggest that **guides can help to break barriers and ease the way to getting into regenerative practices**. Users valued sustainability and convivial principles but prioritized immediate feasibility, efficiency, and understandable language as one of the aspects of accessibility. Another important part to go from going from knowledge to action are social triggers and tangible interactions that can enrich the experience and encourage open flow of creation. The research thus supports the idea that *materials and methods* (e.g. low-cost supplies, shared spaces) and *interaction design* (e.g. analog to digital tools, assistive technology) besides being convivial must be aligned with wants and needs of busy people in consumerist world.

The project's main contributions are:

- **A set of design guidelines** for regenerative guides: e.g., start with overview, provide analog layer, playful prompts; enable "assistive" technology; adopt inclusive, everyday language, remember about human touch and respect people's time and encourage them. These guidelines are grounded in both our user findings and the theoretical framework (knowledge evolution, degrowth values, user sovereignty).

- **Empirical insights into barriers:** We identified concrete obstacles to creative action (lack of time, materials, confidence) and showed that low-cost, time-boxed activities plus peer encouragement can overcome these barriers. We saw potential and need for analog and communal experiences.

- **Proof-of-concept prototypes:** The zine-maker and guide-maker tools demonstrate how to bridge physical and digital. For instance, the zine-maker satisfies the strong analog preference while the guide-maker channels handwritten recipes into structured content - together validating a hybrid *paper-digital ecosystem*.

**Limitations:** The findings are based on a short, festival-based study with a relatively young, self-selected group. As noted, this may not represent longer-term use or broader demographics (families, non-creatives, etc.). We also tested only low-fidelity prototypes, so reactions to a polished product could differ. Future work should conduct longitudinal trials, involve more diverse communities (including less tech-savvy or older users), and test the guide system in real-world DIY or repair contexts to gauge actual behavior change and community growth.

**Future directions:** Building on this work, the guide platform could evolve into a living "digital garden" where users or experts continually enrich content. Making flexible analog bridges through modular, adaptable zines and kits as well as digitizing physical mediums can become a valuable aspect of the system. Integrating better multimodal accessibility (e.g., voice prompts, tangible interfaces) and measuring outcomes (e.g., how many repair tasks are completed) would be valuable. Exploring partnerships with maker spaces or sustainability initiatives to make cyclical pop-up making sessions could extend longitudinal study of decentralized production trends. Finally further research should refine

the human-computer partnership model: for example, testing chatbots as live encouragement or adaptive reading of curated content to ensure relevance and trust.

In summary, by synthesizing affordances of digital technology with human-centered values, this thesis charts a path for knowledge systems that empower anyone to think, live  and create for collective regeneration. With careful design rooted in conviviality and transparency, such tools can lower barriers to creativity and help transform isolated consumers into careful  connected creators.

## 6.1 Contributions

This research makes three main contributions:

1. Design Guidelines for Regenerative Guides -Principles for blending analog and digital formats, starting with simple, playful entry points, enabling assistive technologies, using inclusive language, and respecting participants' time and agency.

2. Empirical Insights into Participation Barriers -Evidence that time constraints, material access, and confidence are key obstacles, and that low-cost, time-boxed activities with social triggers can effectively lower these barriers.

3. Hybrid Proof-of-Concept Prototypes -Demonstration of a physical-digital ecosystem where a zine-maker supports strong analog preferences and a guide-maker enables community-driven adaptation and remixing. Additionally, some physical prototypes and artifacts were made on site.

4. Real-World Validation of Concept and Product Potential -Field testing in a festival environment provided preliminary validation of *waterlike.tools* as both a design approach and a viable platform concept, revealing user interest, trust dynamics, and opportunities for scaling into community-driven, regenerative production ecosystems.

## 6.2 Future Work

Building on this research, *waterlike.tools* can be expanded and tested in diverse contexts to better understand its scalability and adaptability. Future directions include:

1. Scaling and Contextual Testing - Deploy the guide system in urban, rural, and international settings through local hubs, maker events, and cross-cultural case studies.

2. Technological Exploration - Integrate emerging tools such as AR overlays, assistive audio, semantic web structuring, and AI-assisted guide generation to enhance accessibility, adaptability, and creative support.

3. Broader Domains - Apply the guide model to areas beyond DIY, including food systems, cultural rituals, art, and activism-framing guides as invitations to participate and transform rather than tools for productivity alone.

4. Community-Driven Knowledge Sharing - Co-create with experts, artisans, and grassroots groups to refine metadata, modularity, and remixing features; explore cooperative models for long-term stewardship.

5. Longitudinal and Behavioral Impact Studies - Conduct extended trials in real-world DIY or repair contexts to measure sustained use, trust evolution, and actual behavior change.

By pursuing these directions, the practice could move from a local prototype toward a distributed, convivial infrastructure for collective regeneration and practice that can exceed geographical and personal boundaries.

## Research Opportunities (table 7)

| Area | Opportunity |
|---|---|
| **Degrowth Tech** | Test “screenless” or *minimum viable AI* knowledge guides |
| **Convivial Design** | How to design digital tools that feel like analog rituals |
| **Human-AI Collaboration** | GPT as *conversation partner* and encouragement not oracle |
| **Accessible Making** | Reframe guides as play, social creativity |
| **Knowledge Infrastructure** | Build decentralized, updatable guide garden with attribution & forks |

## 6.3 Closing Thoughts

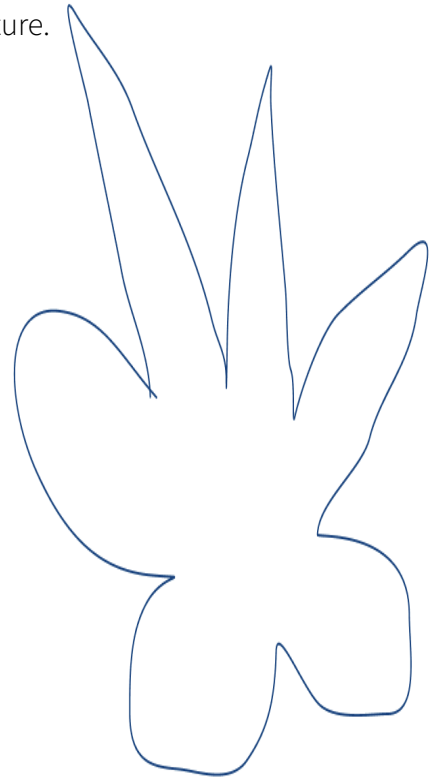
This work reflects the potential of accessible, sustainable knowledge systems that empower people-not just to consume, but to create together. It envisions a future where “doing it ourselves, together” is a global norm. Where people trust in themselves supported by open knowledge, decentralized production, and inclusive design.

In a world burdened by extraction, distraction, and burnout, what if design shifted its focus from efficiency to regeneration? *waterlike.tools* imagines a different kind of system:

- One that does not dictate outcomes, but nurtures emergence.
- One that helps people do things together, not just faster alone.
- One that allows us to feel more like water-adaptive, flowing, collective.

By making tools that are transparent, trustworthy, and participatory, we can shape technologies that serve communities rather than markets. Instead of extracting value, we can compose meaning-together.

This thesis hopes to be a small step toward that future.



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# Appendices List

## Appendix A – Design Guidelines

How to make guides? - a guide

## Appendix B – Prototype Documentation

- B.1 Prototype Implementation - Development approach, tech stack considerations, and reasoning for low-fidelity, speculative prototyping.
- B.2 Modules & Functionality - Short descriptions access to code of prototypes: Guide Maker, Guide Explorer, Zine Builder, Marketplace.

## Appendix C – User Testing Materials

- Survey instrument (the 10 physical-format questions).
- Semi-structured interview guide

## Appendix D – AV Production

- Link to a short video promoting the thesis and ideas behind it.