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Designing the Design Toolkit: the hidden design behind successful workshops

BY SHENG HUNG LEE

"Design as a tool for improving daily life and the appreciation of human existence." — Jasper Morrison, Utilitas vs. Usuiscaetum (2002)

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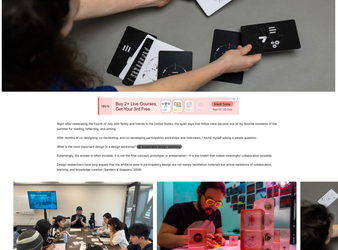

Right after celebrating the fourth of July with family and friends in the United States, the spark days that follow have become one of my favorite moments of the summer for reading, reflecting, and writing.

After months of co-designing, co-facilitating, and co-developing participatory workshops and interviews, I found myself asking a simple question:

What is the most important design in a participatory workshop?

Surprisingly, the answer is often invisible. It is not the final concept, prototype, or presentation—it is the toolkit that makes meaningful collaboration possible.

Design researchers have long argued that the artifacts used in participatory design are not merely facilitation materials but active mediators of collaboration, learning, and knowledge creation (Sanders & Stappers, 2008).

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Collaborating on Design Thinking Cards. Photo by Sheng Hung Lee

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Long before participants enter the room, designers are already planning and shaping how conversations unfold. Key ideas are expressed, and how collaboration emerges. In every way, **it** designing a welcoming region and designing how people

As someone trained in both industrial design and electrical engineering, I have always enjoyed creating artifacts for experimentation. I am particularly interested in bringing tangibility into the design process—transforming abstract ideas into physical objects that invite people to think, make, and learn together.

During my time at EDS and Continuum, I contributed to numerous build-to-think and make-to-learn projects, including the Ford 360 user experience project, the Fiskars kitchen tool project, and the GM vehicle experience project.

Across these diverse contexts, toolkits were never simply facilitation materials or project deliverables. They became essential vehicles for exploration, communication, and discovery, enabling teams to prototype ideas and learn through making (Mackenzie Author Sun 2009).

Earlier this summer in Jena, I facilitated a two-day Design for Longevity workshop with design students from Shih Chien University in Taiwan and Mauritius Int'l University (MIU) in Jena.

Forty students worked in eight interdisciplinary teams using the DfL Toolkit—a set of 36 design cards (Figure 1)—as a shared research artifact that facilitated conversations among facilitators, students from different cultural and disciplinary backgrounds, and interview participants.

Guided by the DfL Toolkit, students conducted campus observations and reflected on what they saw, heard, and experienced while exploring how universities could become more longevity-friendly environments.

Figure 1. The Design for Longevity (DfL) Toolkit, a set of 36 design cards that help students and facilitators explore how universities could become more longevity-friendly. Photo by Sheng Hung Lee

Another example comes from my doctoral research at the Massachusetts Institute of Technology (MIT). Together with the MIT AgeLab, I co-designed and co-facilitated the Longevity Planning Workshop (LPW)—a tangible exercise I created that complementary planning services can use to

Within this workshop, participants in the LPW used the Longevity Planning Cards (Figure 2) to create a shared space enabling people from different backgrounds to collaborate despite having different experiences, vocabularies, and perspectives.

As longevity objects, they provide participants with a shared language for expressing experiences, communicating ideas, and building conversations together.

When developing the Longevity Planning Workshop (LPW) with the MIT AgeLab, my intention was to create provocative prompts rather than instructional tools. The Longevity Planning Cards were designed to invite reflection, dialogue, and play with different concepts, transitioning abstract discussions about longevity and financial planning into engaging and personal conversations.

Instead of simply answering interview questions, participants were encouraged to think through making, interaction, and storytelling.

Another benefit of creating LPWs, and other tangible design artifacts, as boundary objects is that they create an exploratory space where participants can experiment without worrying about getting the "right" answer.

Unlike traditional surveys or structured interviews, where participants may feel pressure to respond correctly, a design toolkit encourages exploration, iteration, and shared learning. The goal is not to collect perfect answers but to surface assumptions, misunderstandings, and convergence, where uncertainty becomes an opportunity for learning rather than something to avoid.

Figure 2. The Longevity Planning Workshop (LPW) was co-designed and co-facilitated with the MIT AgeLab to help people explore financial planning and aging. Photo by Sheng Hung Lee

1. Design toolkits as boundary objects

Creating shared spaces for participation

Whether they take the form of tangible artifacts, such as cards, rulers, or blocks, or digital experiences, such as animations and interactive platforms, design toolkits function as boundary objects that enable collaboration across roles, disciplines, and lived experiences. Rather than requiring participants to collaborate despite having different experiences, vocabularies, and perspectives.

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2. Design toolkits as research infrastructure

Making thinking visible

One of the most valuable aspects of **it** designing is toolkit is that it naturally documents the evolution of ideas. Over time, I have found that the toolkit gradually becomes embedded in the research process itself.

Rather than functioning merely as research materials, toolkits become part of the research infrastructure itself. Supporting the iterative generation, documentation, and interpretation of knowledge throughout the design process (Mazer, 2015).

This perspective also aligns with Research through Design (RtD) method, an approach introduced by scholar and educator Christopher Frayling (1993), which positions the act of designing as a legitimate mode of inquiry.

From this perspective, the design toolkit is not simply an output of research but also a means of generating knowledge throughout the design process.

As the project evolves, designers and researchers continuously refine not only the toolkit's appearance but also its intended function. While the research question may remain constant, the toolkit continually evolves alongside the project.

For example, a tool the toolkit intended to explore abstract concepts in the early stage of design workshops? Does it help participants tell stories in the later stage of design process? Is it designed to encourage dialogue, reflection, or co-creation across the entire experiment?

Answering these questions requires designers and researchers to clarify both the goals of the study and the role that each artifact plays within it. The purpose of a toolkit is rarely fixed. Instead, it evolves alongside the project, adapting to new insights, changing research questions, and practical constraints such as time, budget, and participant needs.

It Designing a toolkit is also a way of demonstrating respect for participants. A thoughtfully crafted toolkit signals that researchers have carefully considered the overall participant experience rather treating participants merely as sources of data.

Every detail, from the visual language and material choices to the timing of activities, contributes to the quality of engagement (Figure 3).

Figure 3. A prototype of a design toolkit for a workshop with students from Shih Chien University in Taiwan and Mauritius International University. Photo by Sheng Hung Lee

One accessible example is the use of Post-it Notes in design thinking workshops. Post-it Notes, Sharpies, markers, Pop-Outs, and even simple sheets of paper together represent a minimal yet highly effective design toolkit.

Because these materials feel so ordinary, we often underrate their potential design without them.

Before placing these materials on the table, we should ask ourselves: Should this toolkit serve as an icebreaker? Should it support collaboration mapping? Or should it become an artifact for "various plus" (Schrage, 2000) that increases participants' engagement, trust, and evaluate ideas together?

These seemingly small design decisions fundamentally shape both the research experience and its outcomes.

3. Design toolkits as synthesis artifacts

Turning ideas into tangible artifacts

Perhaps the reason I enjoy designing toolkits most is that they force me to clarify my own thinking.

Designing a toolkit requires researchers to synthesize large amounts of qualitative insight into prompts, visuals, and interactions that support collective sense-making (Kolko, 2010; Sanders & Stappers, 2012).

Designing within the constraints of space, content, production costs, time, and participants' attention requires difficult decisions about what truly matters.

Every word, graphic, prompt, and interaction must justify its existence.

As illustrated in Figure 4, the DfL Cards became much more than communication devices; they evolved into tangible synthesises of the research itself.

Filled with researchers' comments, sketches, and annotations, the DfL Cards documented the narrative refinement of content, visual language, and sequencing throughout the design process.

Figure 4. The evolution of the Design for Longevity (DfL) Toolkit, from early prototype (2020) to final version (2021). Photo by Sheng Hung Lee

While aesthetics certainly matters, an effective design toolkit is never designed for appearance alone. It balances beauty with usability, production constraints with research objectives, and creativity with clarity.

In many ways, **it** designing a toolkit mirrors the broader process of design research: making the invisible visible and transforming complex ideas into tangible experiences that people can understand, discuss, critique, and build upon together.

Designing the character of collaboration

Designing a successful workshop is less about creating the final concept than designing the conditions that enable people to think, create, and learn together.

Throughout this article, I have argued that design toolkits play three essential roles in the design process: they **facilitate participation** by serving as boundary objects, **document thinking and making** as part of the research infrastructure, and **synthesize** ideas by synthesizing complex concepts into tangible artifacts.

Ultimately, I have come to see design toolkits not as supporting materials but as carefully designed experiences. They shape participation, capture collective thinking, and transform abstract ideas into shared understanding.

In The Unimportance of Form and Other Arguments, product and furniture designer Jasper Morrison (2018) introduces the concept of "**Objectality**"—a way of describing the character or object immediacy.

He argues that Objectality is the equivalent of personality. "It's the character and spirit of things. It's what artifacts are, or, in reason or from, an object" (p. 108).

Rather than arising from a single feature, objectality emerges from the balance of many variables, including form and weight, materials and the absence of materials, discretion and indecisiveness, and function and expression.

Morrison's concept offers a useable lens for thinking about design toolkits. Like any well-designed object, a toolkit possesses its own character. Its objectality influences how facilitators guide discussions, how participants engage with one another, how stakeholders contribute, and ultimately how the entire workshop unfolds.

It Designing a toolkit, therefore, is not simply about producing a collection of cards or artifacts—it is about **shaping the character of collaboration itself**.

Viewed through the lens of participatory design and Research through Design (RtD), design toolkits are not merely supporting materials but epistemic artifacts that enable collaboration, documentation, and knowledge production. By designing better toolkits, we create better conversations, stronger collaboration, and ultimately more meaningful design outcomes.

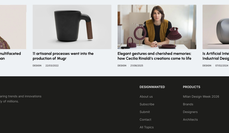

Figure 5. The design for Longevity (DfL) Toolkit (2020) and Longevity Planning Cards (2021). Photo by Sheng Hung Lee

Referred References:

- Buchanan, W., & Fulton Suri, J. (2006). Experience Prototyping
- Carlile, P. R. (2002). A Pragmatic View of Knowledge and Boundaries
- Frayling, C. (1993). Research in Art and Design
- Green, W. (2012). What Should We Expect from Research Through Design?
- Kolko, J. (2010). Abductive Thinking and Sensemaking
- Morrison, J. (2018). The Unimportance of Form and Other Arguments
- Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the New Landscapes of Design
- Sanders, E. B.-N., & Stappers, P. J. (2012). Convivial Toolbox
- Star, S. L., & Griesemer, J. R. (1989). Institutional Ecology, Translations and Boundary Objects
- Schrage, M. (2000). Serious Play: How the World's Best Companies Simulate to Innovate

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