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The Mediating Roles of Mediating Tools in Co-Design

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Co-design is increasingly recognised as an interdisciplinary approach, ensuring that those affected by a design are actively included in developing the solutions that will impact them (Sanders & Stappers, 2008). Several researchers have highlighted the importance of mediating tools to facilitate reflection, communication, and collaboration in complex design with users (Engelbrektsson, 2004; Karlsson, 1996; Eriksson et al., 2021). Such tools are often understood as representations of possible future designs, such as drawings, models, and prototypes, enabling exploration and evaluation (e.g. Houde & Hill, 1997; Sanders & Stappers, 2014), and generative toolkits that support ideation and creativity (Brandt et al., 2012; Sanders & Stappers, 2014). However, while the literature maps such tools to specific design purposes and methodological phases, less attention has been paid to their mediating roles, particularly how they shape socio-cognitive mechanisms in practice.

In response to this continuing gap, this paper brings forward the framework of mediating roles identified by Eriksson (2014), presenting it as an actionable way to understand how mediating tools support communication and collaboration in co-design. The framework was developed through a qualitative content analysis of a nine-month longitudinal co-design process, involving nine iterative workshops with professional users, designers, and developers.

Findings show that design representations introduced during co-design workshops evoked reactions, generated questions, inspired new lines of thinking, and prompted shifts in perspective. Design representations provided tangible and concrete evidence of how a proposed solution might work by synthesising ideas into physical forms. This role is described as a 'Demonstrator'. Workshop participants could collaboratively manipulate design materials and test ideas, supporting reflection-in-action and collective meaning-making. Tangible materials stimulated creativity by encouraging participants to explore, develop and transform potential design solutions together. In accordance with Eriksson's (2014) terminology, this mediating role is described as 'Stimulator'. Design representations were also produced during the co-design process. Through the creation of sketches, models, and other representations, participants materialised their ideas, making them tangible, open to negotiation, and discussable with others. In this sense, the tools function as 'Visualiser'.

In addition, design representations supported participants in explaining ideas and clarifying meanings where terminology was ambiguous or domain knowledge was difficult for others to understand. They helped externalise tacit knowledge by giving form to internal images or experiences through non-verbal interaction with tools and materials. In doing so, the tools act as 'Verbaliser'. Finally, design representations played

an important role in facilitating mutual understanding and convergence across participants. As ideas became increasingly tangible and comprehensible through discussions, negotiations, and hands-on making, participants could integrate different design ideas and insights with their own practice perspective. Hence, the tools function as 'Integrator'.

In conclusion, conceptualising mediating tools through these five roles provides researchers and practitioners with an actionable socio-cognitive framework to intentionally select and design tools that bridge disciplinary gaps and enhance collective meaning-making. Importantly, the roles are not bound to any specific design representation; rather, different tools can actively embody one or several of these roles depending on how they are utilised to facilitate communication and collaboration within the co-design process.

Keywords. Co-design, mediating tools, mediating roles

References

Brandt, E., Binder, T., & Sanders, E. B.-N. (2012). Tools and techniques: Ways to engage telling, making and enacting. In *Routledge international handbook of participatory design* (pp. 145-181). Routledge.

Engelbrektsson, P. (2004). *Enabling the user: exploring methodological effects on user requirements elicitation*. [Doctorial Dissertation, Chalmers University of Technology, Gothenburg].

Eriksson, S. (2014). *The mediating role of product representations; A study with three-dimensional textiles in early phases of innovation*. [Licentiate thesis, Chalmers University of Technology, Gothenburg].

Eriksson, S., Wallgren, P., Sandsjö, L., & Karlsson, M. (2021). Genuine co-design: an activity theory analysis involving emergency nurses in an interdisciplinary new product development project of a novel medical device. *Int. Journal of Human Factors and Ergonomics*, *8*(4), 331-369. https://doi.org/10.1504/ijhfe.2021.10041817

Houde, S., & Hill, C. (1997). What do prototypes prototype? In M. Helander, P. Landauer, & P. Prabhu (Eds.), *Handbook of Human-Computer Interaction* (2nd ed., pp. 367-381). Elsevier Science B.V. https://doi.org/10.1016/B978-044481862-1.50082-0

Karlsson, M. (1996). *User Requirements elicitation: A framework for the study of the relation between user and artefact*. [Doctorial Dissertation, Chalmers University of Technology, Gothenburg].

Sanders, E., & Stappers, P. J. (2014). Probes, toolkits and prototypes: Three approaches to making in codesigning. CoDesign, 10(1), 5-14. http://dx.doi.org/10.1080/15710882.2014.888183