

Traceability of Multi-Stakeholder Feedback in Design Decisions of Prototype Evolution

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Product Design

Keywords: prototype evolution, stakeholder feedback, decision making

Prototypes are artifacts that mediate the interaction between designers and stakeholders in the design process. Prototyping processes in product development involve multiple stakeholder voices, especially during prototype testing where stakeholder feedback can inform future prototype iterations. This study aims to understand how design teams prioritize and balance multi-stakeholder feedback and implement changes in the next iteration of prototypes through a unique case of product development exploring toy prototypes. Specifically, the impact of stakeholder groups on prototype evolution, the fidelity evolution of prototypes across the project, and designers' perceptions of the types of stakeholder feedback are explored. The entire design process of toy product development from a project-based design course incorporates key stakeholder feedback (children, parents, industry experts, and clients) across three different checkpoints through play and usability testing. A mixed-method approach is used including (1) observations of play and usability testing of toy prototypes with various stakeholders, (2) the collection of design artifacts and documents of prototypes, (3) design presentations to stakeholders, and (4) surveys to solicit perspectives on prototyping decisions. This research has implications for developing systems and strategies to streamline the prototyping process in design education as well as uncovering the nuances of decision making in design.

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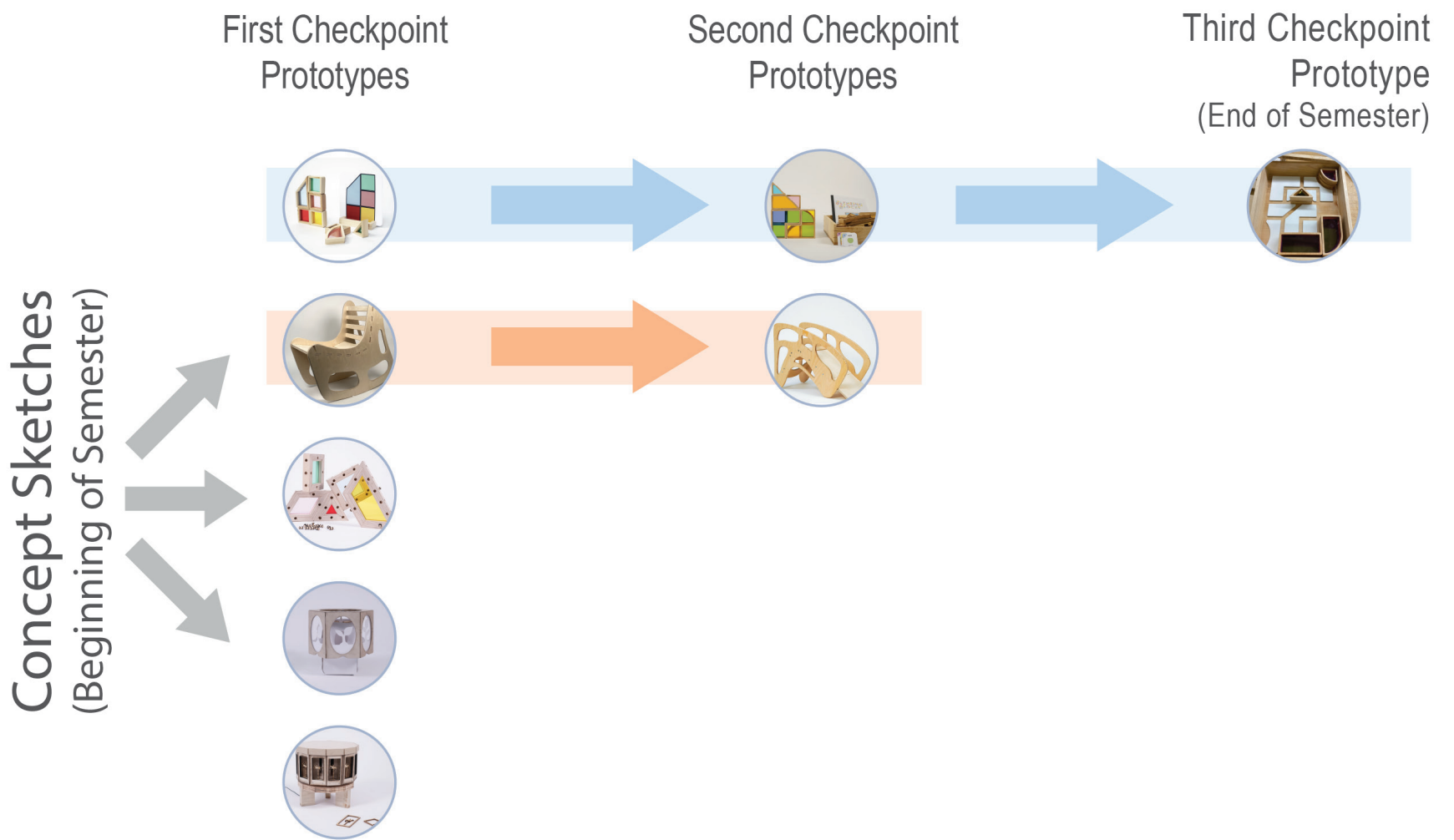


Image 1. Prototype checkpoints through the project-based course for toy prototypes (Codner & Lauff, 2023).



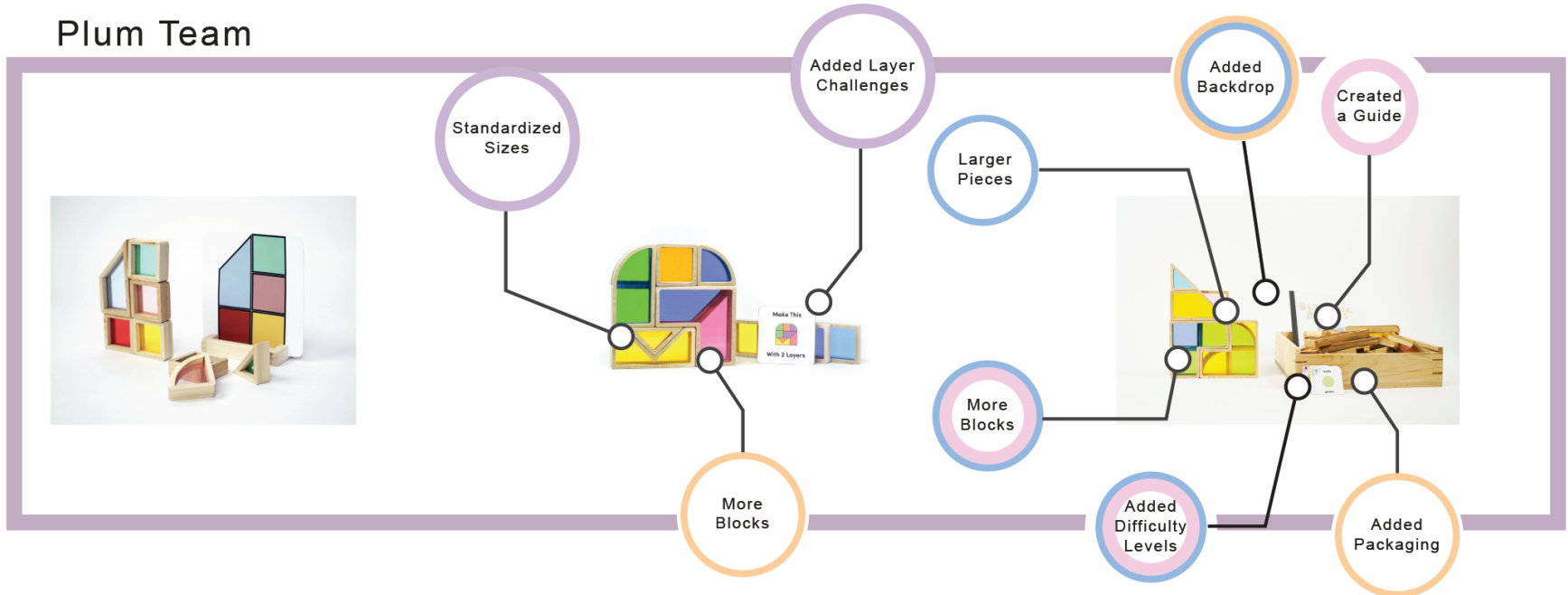
Image 2. The interaction of designers and stakeholders when encoding and decoding prototypes in iterative prototyping with parallel and perpendicular feedback (Codner & Lauff, 2023).

Checkpoint 1

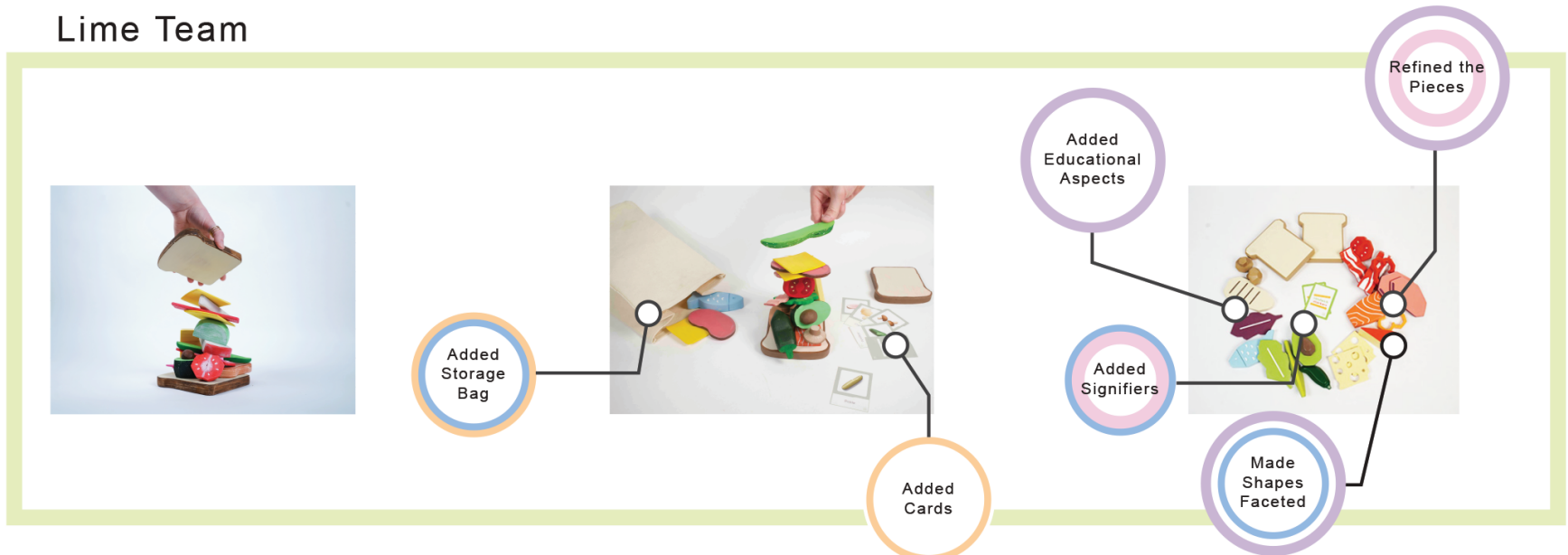
Checkpoint 2

Checkpoint 3

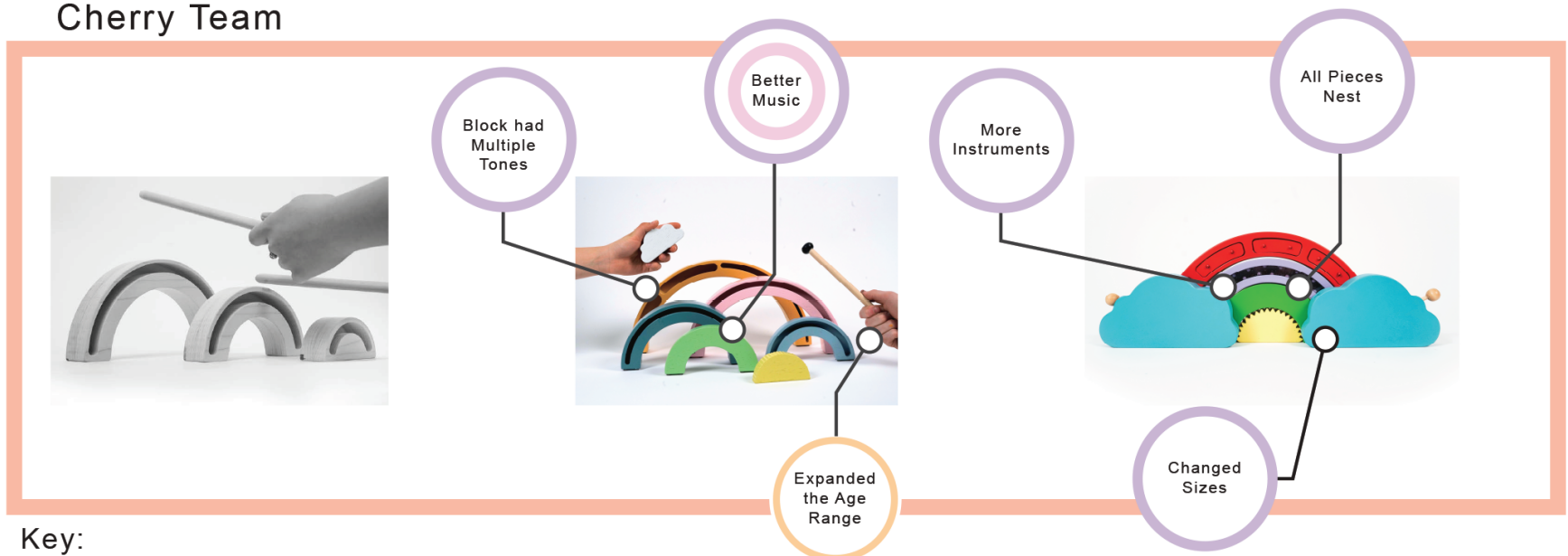
Plum Team



Lime Team



Cherry Team



Key:

● ○ Change in Prototype

- Client
- Expert
- Parent
- Children

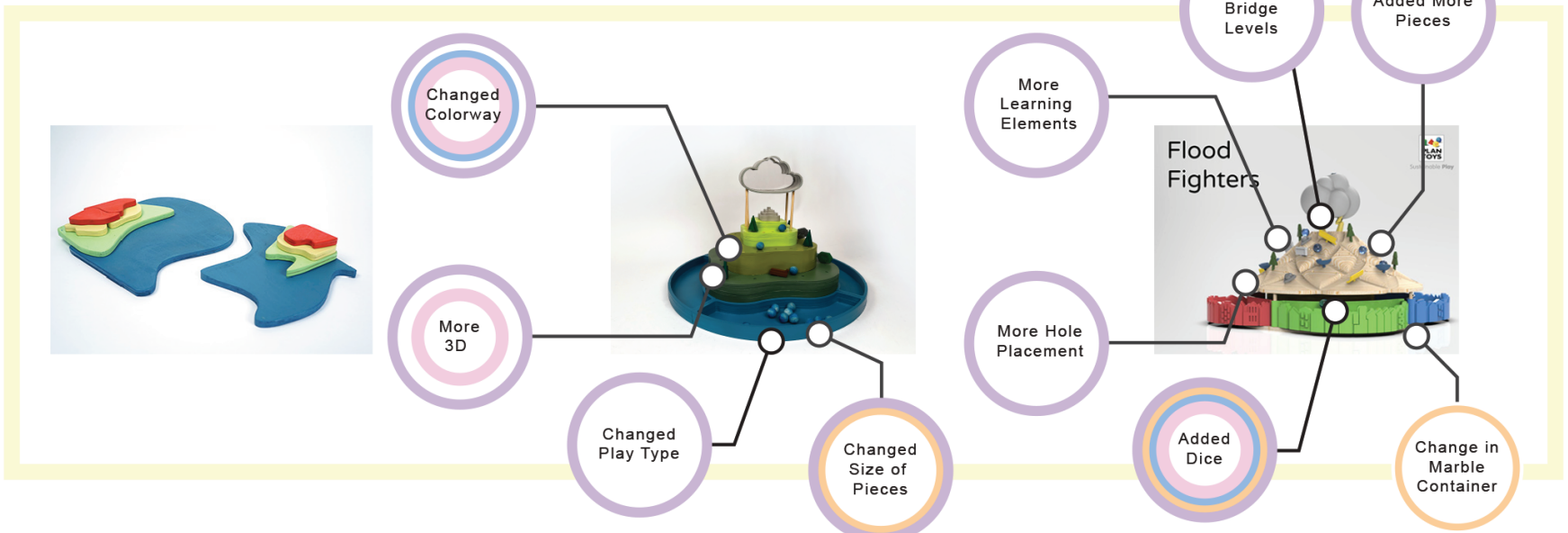
Image 3. Changes made from stakeholders' critical feedback and which stakeholders influenced those changes in the Plum, Lime, and Cherry teams' prototypes (Codner & Lauff, 2023).

Checkpoint 1

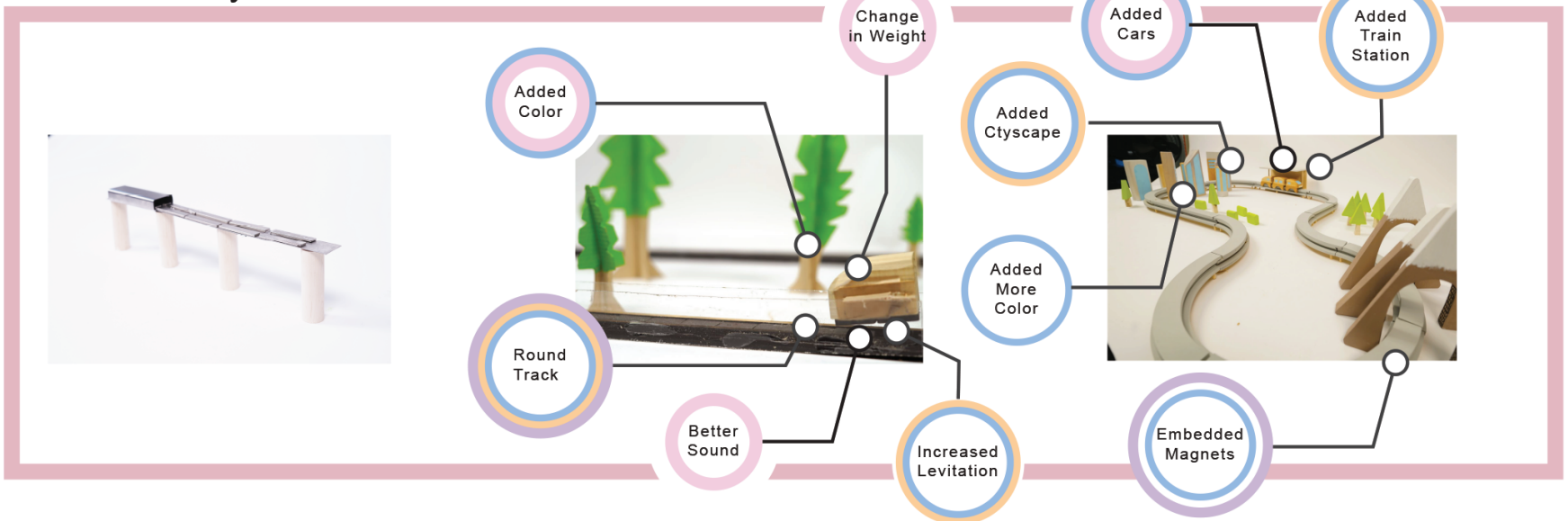
Checkpoint 2

Checkpoint 3

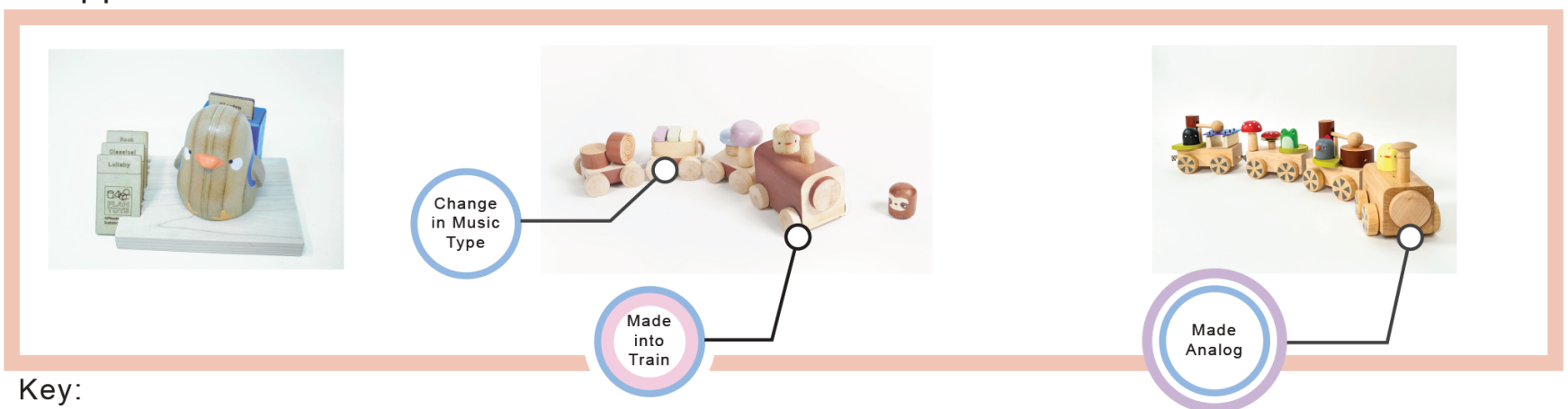
Lemon Team



Strawberry Team



Apple Team



Key:

- ○ Change in Prototype
- Client
- Expert
- Parent
- Children

Image 4. Changes made from stakeholders' critical feedback and which stakeholders influenced those changes in the Lemon, Strawberry, and Apple team's prototypes (Codner & Lauff, 2023).

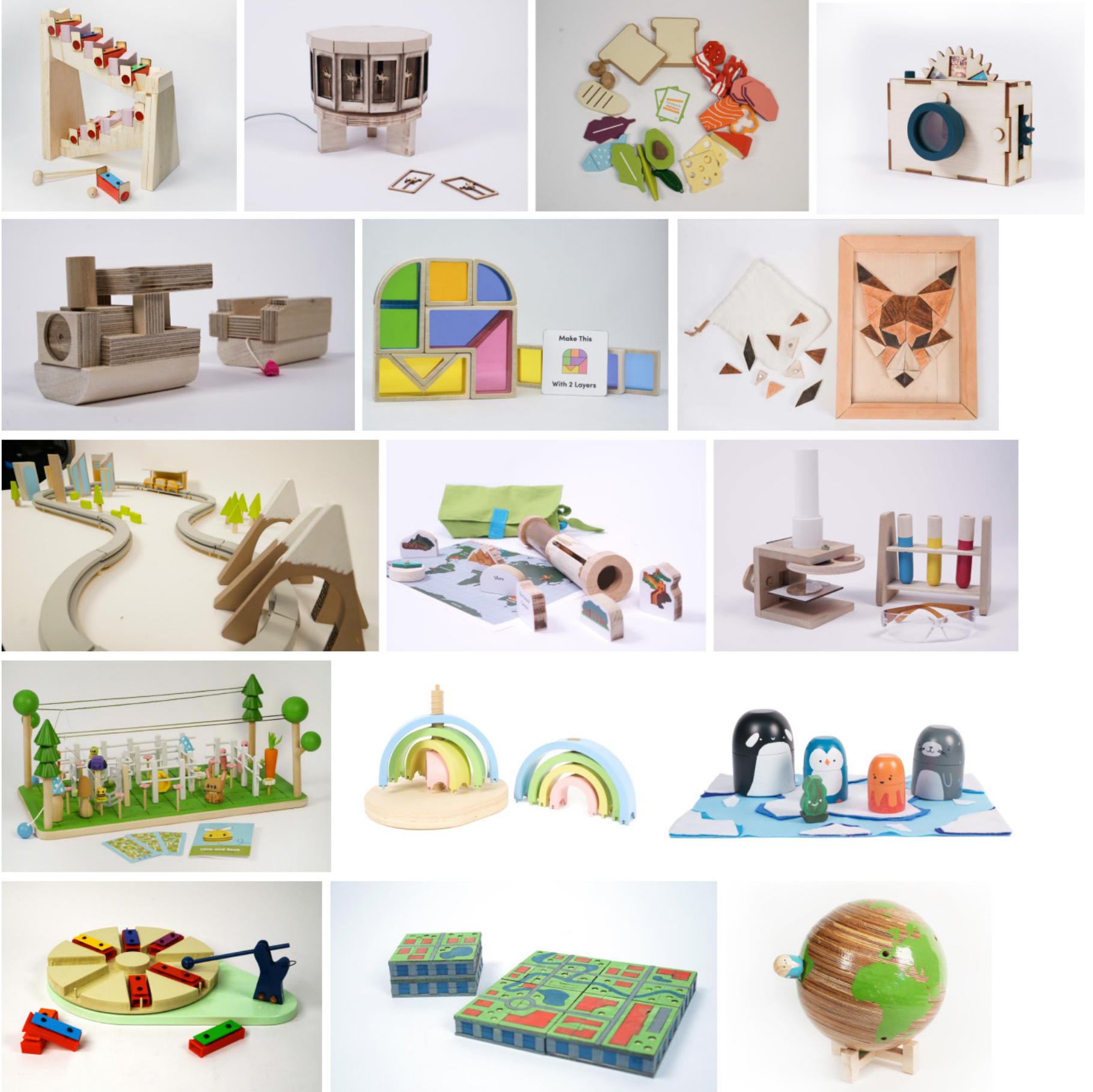


Image 5. Examples of toy prototypes from design teams (Codner & Lauff, 2023).