AI functional fixedness and the challenge of designing beyond efficiency

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This paper examines what drives design students, even when explicitly invited to move beyond utility in AI artefact design, to drift back toward efficiency-driven outcomes. Drawing on two workshop series, it traces this recurring pattern across five annotated cases and identifies the cultural, cognitive, and material forces sustaining it. Building on the theory of functional fixedness, the authors extend the concept from the individual object to a structural, cultural level, naming the resulting condition AI functional fixedness. The paper closes by sketching directions for future pedagogical inquiry aimed at disrupting this condition.

AI functional fixedness; design fixation; sociotechnical imaginaries; uselessness; AI design education

1. INTRODUCTION

Artificial intelligence is gaining increasing attention in design education, promoting novel pedagogical approaches and creative questions about what it means to design for, with, and through. This situation has placed design education at a moment of productive instability. The rapid integration of AI into design practice has impacted established methods, vocabularies, and assumptions about what design is for (Luo, 2025). Yet , the dominant response within both design industry and education has been to absorb AI into existing logics of efficiency, optimisation, and user-centred utility, reinforcing rather than questioning the frameworks that shaped design before AI arrived (Yildirim et al., 2022). How might a different trajectory be traced, one that favours the exploration of the imperfect to produce new understanding? This paper departs from that tendency by positioning uselessness as a fruitful site for rethinking the relationship between design education and AI. The argument draws on empirical observations from two curricular workshop series: *Embedded AI Hardware* during the academic years 2023/2024 and 2024/2025, in which students were invited to push the boundaries of creative expression in designing AI-embedded devices, exploring unconventional and materially experimental directions. Rather than just reporting on the artefacts themselves, this paper empirically reflects on a recurring and theoretically significant phenomenon observed across both workshops: a consistent drift back toward utility-driven thinking, termed *AI functional fixedness*. Authors propose that this condition is not a failure of student imagination or workshop design, but symptomatic of deeper structural forces operating at cultural, cognitive, and material levels. Naming and theorising these forces is a necessary first step toward developing pedagogical approaches capable of displacing the efficiency paradigm in AI design. This paper therefore positions itself as a contribution to an emerging research agenda rather than a resolved methodology.

2. THEORETICAL FRAMEWORK

2.1 Uselessness as design method

The questioning of efficiency and utility in design has a marginal but persistent lineage. Papanek (1972) challenged design's complicity in producing useless and harmful objects, opening a critique of function as ideology; Bowen (2010) proposed deliberately provocative artefacts as a method for surfacing hidden assumptions; and speculative design, particularly Dunne and Raby (2013), established a vocabulary for artefacts that function as questions or provocations rather than solutions. Within this lineage, uselessness occupies a specific position, distinct from speculative design in not projecting alternative futures, and from critical design in not requiring a legible political argument; it has emerged in HCI as an alternative way of knowing that moves away from functionalist tropes (Lepri, McPherson and Bowers, 2020). In this paper, authors understand it as a deliberate methodological stance

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(Bendor and Lupetti, 2025) that disrupts the assumption that designed artefacts should make sense and should be useful, a disruption particularly rewarding in the context of AI, since it denaturalises the idea that intelligence must be directed toward useful ends. Brandalise and Eira's (2020) notion of patadesign offers a rare precedent, demonstrating that principles such as uselessness, absurdity, ambiguity, exception can function as a legitimate creative constraint.

2.2 A pull towards utility

This paper extends that premise into the material context of AI-embedded devices, framing uselessness as the deliberate pursuit of the weird, inefficient, and non-optimal as generative design positions (Webb, 2024; Foster, 2024). Yet design students do not straightforwardly take up this invitation. The workshops examined here were five-week intensive studios conducted in groups under the supervision of a project leader (design industry expert). The first involved 10 Interaction Design students and had no industry partner; the second was run in partnership with an international consumer electronics company with 12 Interaction Design and 30 Product Design students. Both workshops asked students to treat AI as a design material, explore how mundane objects might behave differently because of the embedding of (Gen) AI, and move beyond utilitarian, assistive applications. Students nonetheless arrive carrying dense layers of cultural expectation, collectively held visions of desirable futures stabilised through institutional practices and artefacts (Jasanoff and Kim, 2015), within which intelligence is invariably associated with efficiency, assistance and optimisation, a configuration that reflects specific economic and political interests while presenting itself as natural and inevitable, and one that Forsler et al. (2025) show persists even in explicitly critical educational contexts. Beyond this cultural conditioning, a cognitive dimension compounds the difficulty: design fixation (Jansson and Smith, 1991) describes designers' tendency to remain anchored to known solutions even when invited to depart from them, a susceptibility that persists even when prior examples are explicitly criticised (Purcell and Gero, 1996) and that, in open-ended problems, often operates through a working-backwards strategy in which designers frame problem constraints around prior exposure, producing premature commitment to initial solutions (Restrepo and Christiaans, 2004), a mechanism especially relevant here, since students' prior exposure to AI through utility-oriented interfaces acts as a safety net that shapes ideation beneath conscious awareness. Because a constraint-leveraging mindset is not innate but must be deliberately cultivated (Tromp, 2022), the brief alone does not automatically produce novel thinking; de-fixation instead requires active scaffolding, such as unrelated stimuli, forced reframing, or counter-examples introduced before ideation begins (Jansson and Smith, 1991; Purcell and Gero, 1996). Finally, a third and less explored dimension concerns the tools themselves. AI platforms are designed with specific affordances and implicit scripts (Akrich, 1992) that are not neutral: they encode assumptions about what AI is for and what counts as a legible, good result. Using them against their grain, toward uselessness, illogicality or dysfunction, therefore requires a technical and conceptual friction capable of deflecting creative intention before it reaches expression. This dynamic has already been observed in professional contexts where generative AI use an ideation leads outputs to converge toward algorithmically prevalent aesthetics, as distinctive sensibilities are absorbed into the model's statistical tendencies (Anderson et al., 2024; Wadinambiarachchi et al., 2024). In educational settings, where students often lack both the technical fluency to resist this pull and the critical frameworks to name it, the material pull toward coherence and utility is likely even stronger, and Lupetti and Murray-Rust's (2024) taxonomy of making and unmaking AI magic offers a useful frame for the expectations of intelligence and capability that a pedagogy of uselessness must actively work to disassemble.

3. ANNOTATED PORTFOLIO

Drawing from the annotated portfolio methodology proposed by Gaver and Bowers (2012), the portfolio compiled by the authors and included in the appendix brings together five design projects that explore novel interaction possibilities for mundane artefacts embedding (Gen) AI. This selection represents a continuum of trajectories students took within a common design space, not five distinct ideas. Instead, each project probes a different reading of AI's possibilities, surfacing a recurring pull back toward efficiency and utility, even where the brief invited something stranger. Taken together, they let authors articulate a set of design considerations around this tendency, which they discuss below. These cases are drawn from two successive iterations of the workshop series E*mbedded AI Hardware*. In both editions, students were invited to push the boundaries of creative expression in AI artefact design, exploring unconventional and materially experimental directions. Across the two series, students produced twelve design projects in total. All the projects exhibited an inclination toward utility-driven thinking, independent of problem domain, object type, or student background. The five presented in the portfolio were selected based on the completeness of the design proposal, the clarity and exhaustiveness of supporting documentation, and the extent to which each project developed a distinct

concept capable of illustrating a different facet of the recurring pattern (Table 1). Instead of being an a priori definition, the recurring pattern emerged through the authors' close engagement with each of the twelve projects across the two workshops, in their role as workshop leads and studio supervisors, and through their reflection about students' struggles and performances as they were progressing throughout the workshops. This is consistent with the retrospective, non-experimental character of the study already noted in Limitations (Section 6).

3.1 Converging forces

Read together, these five cases (Appendix) are not evidence that the workshop fell short, or that students lacked imagination. Each of the five projects engages briefly with the non-useful before re-anchoring itself in legibility, justification, and purpose. The forces driving this return seem to combine at three levels: culturally, through internalised imaginaries of AI as assistant and optimiser; cognitively, through the implicit examples that organised ideation before students were aware of it; and materially, through the affordances of the tools themselves. Surprisingly, where the brief was requesting novel interactions, students drifted towards unrealistic technological expectations to remain useful: AI can successfully reinforce correct behaviours through entertaining nudges (Figure 1); AI can reliably detect and regulate internal emotional states pushing for psychological safety (Figure 2); AI can augment memory through structured, gameful mediation (Figure 3); AI can reshape healthy behavior in kids without creating new dependencies (Figure 4); AI can mediate truth and reality itself (Figure 5). All these abilities have surfaced and been embedded into projects despite being problematised by daily news. The following section develops these observations into a theoretical proposition.

4. AI FUNCTIONAL FIXEDNESS, A THEORETICAL PROPOSITION

Duncker (1945) defines functional fixedness as the cognitive inability to perceive an object beyond its conventional function. The concept has been widely applied in problem-solving psychology but has remained substantially confined to the individual dimension and to physical objects. Authors propose extending it in two directions. First, from the single object to the technological system: it is not only the matchbox that cannot be imagined beyond its function as a container (Duncker, 1945), it is AI as a whole that cannot be imagined outside its dominant cultural function as an efficient, intelligent assistant. Second, from the individual to the structure: fixedness is not only a personal cognitive limitation but is reinforced and reproduced by collective sociotechnical imaginaries (Jasanoff and Kim, 2015) and by the material scripts of the tools themselves (Akrich, 1992). Our concern is not with AI as an object of fixedness, but with design practice as the site where fixedness operates. This paper borrows Duncker's framework not to diagnose how designers perceive AI, but to understand how AI constrains the methodological imagination, the repertoire of moves, framings, and intentions that designers bring to a project. When AI enters the design process, it does not arrive as a blank material to be shaped by the designer's intentions. It arrives already coded with expectations of purpose, already oriented toward productivity and problem-solving. This coding does not prevent designers from working critically, but it exerts a persistent gravitational pull on the decisions they make, on what questions they ask, what forms they pursue, and what outcomes they consider legitimate. It is this pull, operating at the level of method rather than object, that is termed, as already anticipated, AI functional fixedness. Therefore, this work defines AI functional fixedness as the structural tendency of designers to perceive and engage with artificial intelligence exclusively through the lens of its dominant cultural function, efficiency, assistance, optimisation, rendering alternative engagements cognitively and materially difficult to sustain, even under explicit creative constraints that require them.

4.1 Positioning AI functional fixedness

AI functional fixedness departs from Duncker's original formulation in three significant ways. First, it operates at the scale of a cultural system rather than a single object: what is fixed is not the perception of a matchbox but the entire imaginative relationship between designers and a technological category. Second, its origins are structural rather than individual: it is produced and reproduced by the interaction of collective imaginaries, material tool affordances, and cognitive habit, rather than by individual cognitive limitation alone. Third, and consequently, it cannot be resolved through the localised de-fixation techniques developed in response to classical functional fixedness, such as introducing unrelated examples or reframing object labels (Jansson and Smith, 1991). The empirical observations from both workshop series point to this condition as a recurring and theoretically significant phenomenon: despite explicit invitation to embrace uselessness as design directions, students repeatedly drifted back toward utility-driven thinking. This work argues this is not a failure of individual imagination, but a structural condition shaped by three interlocking forces: cultural, cognitive, and material. The interplay between these three forces also clarifies how AI functional fixedness relates to, without collapsing into, the constructs it draws upon. Design fixation (Jansson and Smith, 1991) explains

why designers cling to known solutions but treats fixation as a property of individual cognition triggered by exposure to examples; it does not account for why an entire technological category would resist reinterpretation independently of any specific example being shown. Sociotechnical imaginaries (Jasanoff and Kim, 2015) explain how collectively held visions of technology become stabilised and naturalised but operate at the level of culture and policy rather than at the level of a designer's moment-to-moment methodological choices inside a studio project. Script theory (Akrich, 1992) explains how artefacts encode assumptions about their users and uses but addresses the technology's design, not the cognitive and cultural conditions under which a designer resists or complies with that encoding.

4.2 Interlocking effects

AI functional fixedness names the point at which these three mechanisms compound: a cultural imaginary supplies the default meaning of intelligence, a cognitive habit anchors ideation to that default, and a material script makes departure from it costly to sustain, together producing an effect that none of the three constructs, taken individually, is positioned to explain. To recap and unpack each in turn: culturally, students arrive already carrying ideas shaped by sociotechnical imaginaries, which persist even in explicitly critical educational contexts (Forsler et al., 2025), the brief does not neutralise this field but enters into tension with it (Webb, 2024; Foster, 2024). Cognitively, design fixation (Jansson and Smith, 1991, introduced above), means that even when students genuinely intend to depart from familiar design logics, they tend to unconsciously correct their work toward recognisable and justifiable forms, a tendency that active de-fixation scaffolding can address but constraint alone cannot (Purcell and Gero, 1996; Tromp, 2022). And materially, the AI platforms students work with are not neutral instruments: they carry implicit scripts (Akrich, 1992) that orient users toward coherence, legibility, and utility, so that working against their own logic requires a level of technical and conceptual friction capable of deflecting creative intention before it reaches material expression (Anderson et al., 2024; Wadinambiarachchi et al., 2024; Lupetti and Murray-Rust, 2024). Together, these three factors form a self-reinforcing system that is rarely visible to students as such, and that workshop pedagogy has not yet developed adequate strategies to interrupt.

5. TOWARD MITIGATION, DIRECTIONS FOR FURTHER INQUIRY

If AI functional fixedness is structural rather than incidental, addressing it requires interventions at each of the three forces identified above. This section does not propose a resolved methodology, in keeping with the exploratory aim stated at the outset, it sketches a set of directions that future research and pedagogical experimentation might pursue. Culturally, the challenge is not simply to instruct students by pre-defining lenses, but to actively disrupt the imaginaries they bring into the workshop, through immersive exposure to counter-narratives and artefacts that embody radically different assumptions about what intelligence is and what it is for. The goal is to make the dominant imaginary visible as a construction rather than a given. Defamiliarisation, with roots in both literary theory (Shklovsky, 1917) and design practice (Dunne and Raby, 2013), offers a useful frame: the brief should function not only as a path to explore but as an estrangement device. Cognitively, the capacity for novel thinking must be developed incrementally rather than assumed. Workshop design might benefit from a staged approach, beginning with low-stakes exercises in constraint-following that progressively escalate the degree of logical disruption required, building fluency with non-sense before asking students to sustain it across a full project. Materially, future research might explore strategies for using AI tools in ways that actively resist their built-in scripts, through deliberate misuse, operating at the edges of their capabilities, or treating failures and glitches as design material rather than obstacles. The magic machine approach (Andersen and Wakkary, 2019) and the unmaking dimension of Lupetti and Murray-Rust's (2024) taxonomy both offer precedents for orienting toward the tool as a site of critical engagement rather than transparent mediation. Finally, all three levels of intervention require institutional conditions that are not universally available. The experimental latitude afforded by the school, in how the brief is designed, in assessment criteria, and in its relationship to industry, is not typical of design education more broadly. What institutional structures enable or foreclose for this kind of pedagogical experimentation remains an open research question.

6. LIMITATIONS

This study has two limitations that define the scope of its claims. First, neither workshop brief explicitly required students to use uselessness: the invitation was to explore AI beyond utilitarian applications, leaving creative direction open. The suggestion to adopt disruptive lenses was more subtle, conveyed through a series of guiding questions embedded in the brief and designed to open possible directions, as well as through selected examples and use cases discussed during the post-launch framing lecture. Second, no structured methodological framework or de-fixation scaffolding was deployed during the

workshops. Both studies are the result of retrospective empirical observation rather than controlled intervention, the cases were analysed after project completion, without the theoretical framework now proposed having informed their design. What is documented is therefore a tendency observed across cases, not the outcome of a designed experiment. These limitations point directly toward the next research step: developing and testing pedagogical strategies explicitly oriented toward de-fixation.

7. CONCLUSION

Uselessness, this paper has argued, is a productive methodological direction for AI design education and the empirical material from two workshop series points to why it is so hard to sustain in practice. AI functional fixedness, the persistent drift toward utility-driven thinking, is shaped by internalised sociotechnical imaginaries, by design fixation, and by the material resistance of AI tools themself. None of this resolves the problem: the three-factor diagnosis offered here is a first articulation not a finished theory, and the mitigation directions sketched in the preceding sections are hypotheses for further inquiry, not prescriptions. But the difficulty students experience in fully adopting unfamiliar, uncomfortable positions is worth taking seriously, not as a pedagogical inconvenience, but as a theoretically significant symptom of the deeper entanglement between design education and the efficiency paradigm. In this sense, uselessness functions not only as a creative stance but as a diagnostic instrument: it reveals, through the resistance it encounters, the structural forces that shape what design education currently imagines as possible. To develop a genuine pedagogy of inefficiency and uselessness is, therefore, also to develop a more reflexive understanding of the conditions under which design thinking is formed, and of the work required to transform them. This work is offered as a first step in that project, not its conclusion. The research agenda it opens is necessarily collaborative and cross-disciplinary, drawing on design education, cognitive science, STS, and critical AI studies. It is extended here as an invitation to that conversation.

8. ACKNOWLEDGEMENTS

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9. USE OF ARTIFICIAL INTELLIGENCE (AI)

AI-based tools were used to support article preparation, including language refinement, critical reflection on emerging interpretations, and the organization of written material. All AI-generated suggestions were critically reviewed and evaluated by the authors, who retain full responsibility for the content, accuracy, interpretations, and conclusions of this work.

10. REFERENCES

Akrich, M. (1992) The de-scription of technical objects. In Bijker, W.E. and Law, J. (eds), Shaping Technology/Building Society. MIT Press, Cambridge, MA.

Andersen, K. and Wakkary, R. (2019) The magic machine workshops: making personal design knowledge. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI ’19), Glasgow, UK, 4–9 May 2019, pp. 1–13. ACM, New York, NY.

Anderson, B.R., Shah, J.H. and Kreminski, M. (2024) Homogenization effects of large language models on human creative ideation. Proceedings of the 16th Conference on Creativity and Cognition (C&C ’24), Chicago, IL, USA, 23–26 June 2024, pp. 413–425. ACM, New York, NY.

Bendor, R. and Lupetti, M.L. (2025) Teaching speculative design. International Journal of Technology and Design Education, 35, pp. 403–425.

Bowen, S. (2010) Critical theory and participatory design. CHI ’10 Extended Abstracts on Human Factors in Computing Systems, Atlanta, GA, USA, 10–15 April 2010. ACM, New York, NY.

Brandalise, I. and Eira, H. (2020) Patadesign: a pedagogical experiment on design of exception, absurd artifacts, and imaginary interfaces. Dearq, 26, pp. 36–43.

Duncker, K. (1945) On problem-solving. Psychological Monographs, 58(5).

Dunne, A. and Raby, F. (2013) Speculative Everything: Design, Fiction, and Social Dreaming. MIT Press, Cambridge, MA.

Forsler, I., Bardone, E. and Forsman, M. (2025) The future postdigital classroom. Postdigital Science and Education, 7(3), pp. 682–689.

Foster, N. (2024) On distortion. Dutch Digital Day 2024. https://youtu.be/qgGF2Hf2pBA (retrieved 7 July 2026).

Gaver, W. and Bowers, J. (2012) Annotated portfolios. Interactions, 19(4), pp. 40–49.

Jansson, D.G. and Smith, S.M. (1991) Design fixation. Design Studies, 12(1), pp. 3–11.

Jasanoff, S. and Kim, S.H. (eds.) (2015) Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power. University of Chicago Press, Chicago, IL.

Lepri, G., McPherson, A. and Bowers, J. (2020) Useless, not worthless: absurd making as critical practice. Proceedings of the 2020 ACM Designing Interactive Systems Conference (DIS ’20), Eindhoven, Netherlands, 6–10 July 2020, pp. 1887–1899. ACM, New York, NY.

Luo, Y. (2025) Designing with AI: a systematic literature review on the use, development, and perception of AI-enabled UX design tools. Advances in Human-Computer Interaction, 2025(1).

Lupetti, M.L. and Murray-Rust, D. (2024) (Un)making AI magic: a design taxonomy. Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI ’24), Honolulu, HI, USA, 11–16 May 2024, pp. 1–21. ACM, New York, NY.

Papanek, V. (1972) Design for the Real World: Human Ecology and Social Change. Pantheon Books, New York, NY.

Purcell, A.T. and Gero, J.S. (1996) Design and other types of fixation. Design Studies, 17(4), pp. 363–383.

Restrepo, J. and Christiaans, H. (2004) Problem structuring and information access in design. Journal of Design Research, 4(2), pp. 218–236.

Shklovsky, V. (1917) Art as technique. In Lemon, L.T. and Reis, M.J. (eds), Russian Formalist Criticism. University of Nebraska Press, Lincoln, NE, pp. 3–24.

Tromp, N. (2022) Creativity from constraints: theory and applications to education. Thinking Skills and Creativity, 46, 101118.

Wadinambiarachchi, S., Kelly, R.M., Pareek, S., Zhou, Q. and Velloso, E. (2024) The effects of generative AI on design fixation and divergent thinking. Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI ’24), Honolulu, HI, USA, 11–16 May 2024, pp. 1–18. ACM, New York, NY.

Webb, M. (2024) Tech has graduated from the Star Trek era to the Douglas Adams age. Interconnected, 21 February.

Yildirim, N., Kass, A., Tung, T. et al. (2022) How experienced designers of enterprise applications engage AI as a design material. Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI ’22), New Orleans, LA, USA, 29 April–5 May 2022, pp. 1–13. ACM, New York, NY.

Appendix

ANALYTIC TABLE

Table 1 presents an analysis of the five selected projects through the lens of AI Functional Fixedness and its three constituent forces: technological imaginaries, cognitive anchoring, and material scripts. Through an iterative comparative reading of project documentation, artifacts produced by students and their design rationales, the authors identified recurring ways of framing both design problems and AI-enabled solutions. The table synthesizes this analysis by illustrating how culturally available understandings of AI appear to shape ideation and become translated into design propositions. Ultimately, the analysis suggests that AI Functional Fixedness provides a useful interpretative lens for understanding recurring patterns in the conception and materialization of embedded AI artifacts, even under creative constraints explicitly intended to encourage alternative engagements.

Table 1: *How AI Functional Fixedness emerges across the selected projects*

Project	Technological Imaginary	Cognitive Anchoring	Material Script	Observed Manifestation
T.O.L.	*AI improves human behaviour through intelligent guidance and feedback.*	*Waste sorting and management are presented as behavioural problems needing correction and compliance.*	*The user is scripted as a fallible sorter in need of correction; the competence to judge 'correct' disposal is delegated to the device, which narrates and evaluates the user's actions in real time.*	*Behavioural optimization where humour becomes the leverage point to promote compliance.*
MOVA	*AI can understand and improve emotional wellbeing.*	*Rumination is presented as a detectable and manageable condition that AI can address.*	*The user is scripted as an emotionally legible subject; the competence to detect and regulate rumination is delegated to the device, which positions itself as a therapeutic authority.*	*Emotional assistance and regulation, with AI framed as a therapeutic companion.*
Memo	*AI enhances cognition by compensating human limitations.*	*Memory is presented as the result of a process that can be improved through AI-mediated intervention.*	*The user is scripted as a cognitively limited rememberer; the competence to capture, structure, and return memory is delegated to the device, which positions itself as an external prosthesis for recall.*	*Cognitive optimization, with AI working as a memory augmentation tool.*
ULU	*AI can promote healthy development in kids.*	*Children's play is introduced as something that can be guided through AI intervention.*	*The child is scripted as someone whose play must be structured to develop soundly; the competence to plan and adapt activity is delegated to the device, substituting one authority (screens) with another (AI guidance).*	*Developmental solutionism, replacing one form of dependency (screens) with another form of AI-mediated guidance.*
Navi	*AI can identify and verify information.*	*Evaluating information is offered as a task that AI can perform trustworthily.*	*The user is scripted as unable to reliably judge the credibility of information; the competence to verify and signal accuracy is delegated to the device, which positions itself as an epistemic gatekeeper.*	*Epistemic mediation, where AI becomes involved in shaping the perception and evaluation of reality.*

ANNOTATED PORTFOLIO

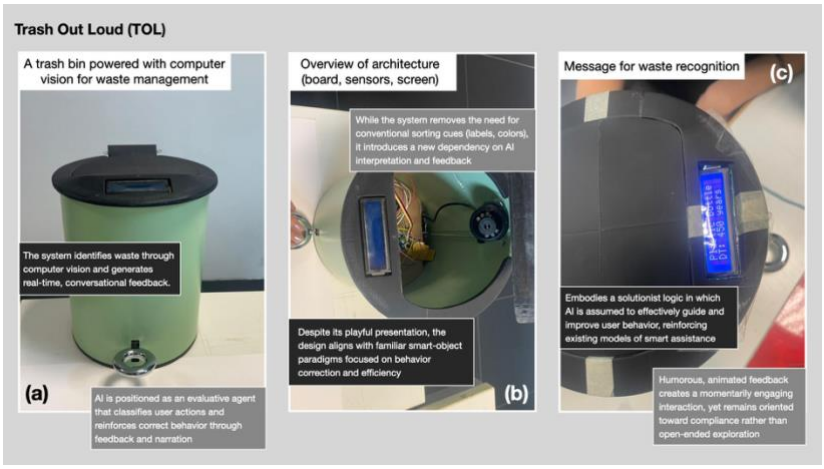

Figure 1: *Trash Out Loud (Source: Domus Academy)*

Trash Out Loud (T.O.L.)

T.O.L is a magical trash can that uses AI to transform waste disposal into an engaging experience. Equipped with a camera for object identification and a display for feedback, T.O.L. classifies waste and generates humorous, interactive conversations between the garbage inside. Unlike the following projects, it demonstrates a strong connection with the tradition of IoT devices.



Figure 2: *Mova (Source: Domus Academy)*

Mova

Mova is a voice-interactive device offering positive distraction for individuals experiencing rumination, a repetitive cycle of negative thinking often linked to anxiety and depression. Through motion and voice sensors, it detects signs of rumination, such as shifts in tone or speech patterns. Through interactive conversation, the device guides users to externalize their thoughts, process emotions, and reframe from negative thinking. By providing personalized prompts and emotional support, the device offers real-time distraction and fosters emotional resilience. Mova marks a drift from the first project: it pushes boundaries of AI capabilities toward psychological balance while still staying around the idea of optimal intervention regulating emotions.

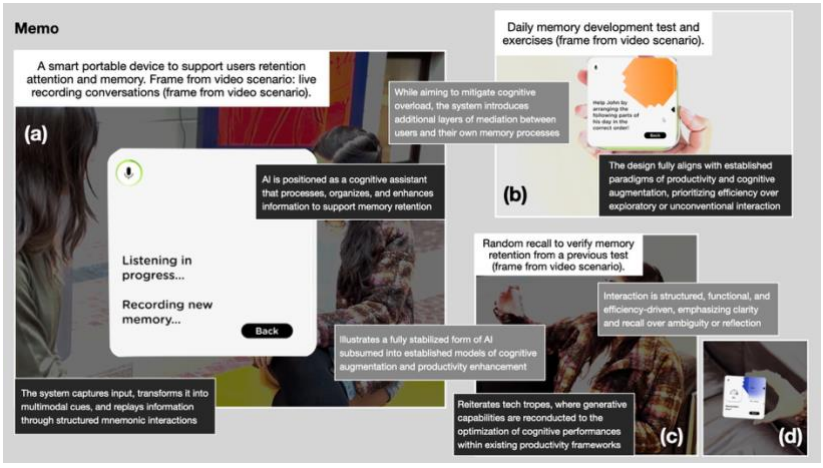

Figure 3: *Memo (Source: Domus Academy)*

Memo

Memo is a personal device conceived to enhance memory training and recall by leveraging sensory interactions (visual and auditory cues). It transforms information into personalised, interactive mnemonic bit-sized tests and exercises to counteract the cognitive decline associated with digital overload, aiming to improve memory retention and cognitive function across diverse age groups. In this third project, students move towards augmentation of human memory with an interaction model that mimics video games.

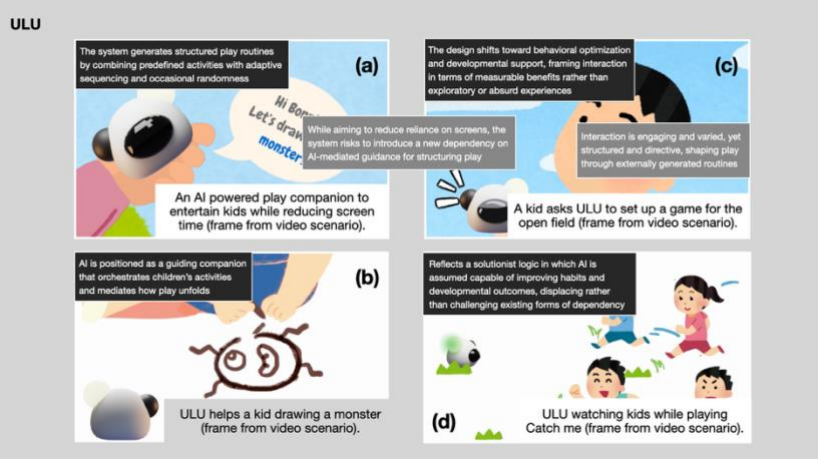

Figure 4: *ULU (Source: Domus Academy)*

ULU

ULU is an AI-powered play companion that seeks to reduce screen time among 3-6-year-olds by promoting active, well-balanced play. In contrast to passive digital screens, ULU engages children in active indoor and outdoor play that fosters creativity, social competence, and brain development. It encourages a healthy relationship with technology through screen-free activities that teach kids useful skills while having fun. While application space and target users drift, the direction of the project further adheres to the shared techy visions offering positive development guidelines and optimal behavioural pattern reinforcement.

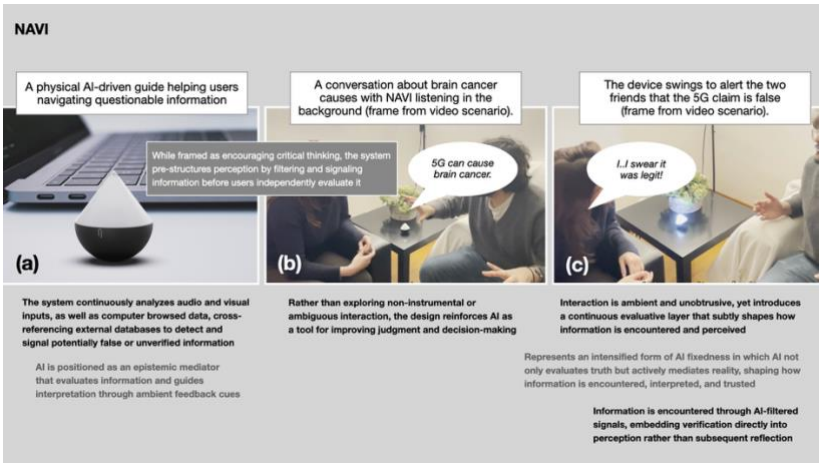

Figure 5: *NAVI (Source: Domus Academy)*

NAVI

Navi is a physical device designed to help users navigate online and in person misinformation. It monitors multimodal data in real time, cross-references them against fact-checking databases, and signals its assessment through movement and light: a small wobble for unverified claims, a pronounced wobble for detected misinformation. The students introduced a note of epistemic caution, "our AI doesn't define the truth, it reminds us of when to double-check", but this qualification operates within, rather than against, a fundamentally instrumental logic. Indeed, here the trajectory remains unchanged: it is about optimising access to knowledge and making conversations more efficient. However, where the drift becomes relevant is the reinforcement of usual technological imaginaries: as fallacious species, we delegate to an equally fallacious technology (hallucinations, made up facts) the duty to alert users against inaccuracy and as such to mediate reality.