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Enhancing Interior Design and Staff Experiences in Academic Workspaces through Design Thinking

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Abstract

This study investigates the application of the design thinking methodology to enhance the quality and functionality of a staff room in an academic institution. Through a participatory design approach, the study engaged academic staff in focus group discussions to understand their needs, frustrations, and aspirations. Data were further supported by visual documentation of the space, observational analysis, and iterative prototyping phases. A series of interventions were proposed and implemented using the available furniture and spatial resources, with feedback loops incorporated at each stage to refine solutions collaboratively. The design thinking process—empathize, define, ideate, prototype, and test—was employed not just as a methodology, but as a mindset to promote inclusive and human-centered spatial improvement. Findings demonstrate significant enhancements in staff comfort, privacy, and functionality, as well as increased usage and spatial engagement. The intervention created a more cohesive environment, aligning with principles of user-centered interior design.

Ultimately, this research highlights the transformative potential of design thinking in educational workplace settings. It contributes to the growing discourse on participatory design within interior environments, showcasing how collaborative design can directly improve employee satisfaction, well-being, and productivity in academic contexts.

Keywords

Design Thinking, Interior Design, Academic Workspaces, User-Centered Design Interior architecture

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Introduction:

Interior design within academic workspaces plays a pivotal role in shaping staff experiences, influencing productivity, wellbeing, and satisfaction Despite this, university staff rooms frequently remain neglected, reflecting insufficient attention to functional, aesthetic, and emotional user needs (Vischer, 2007). Recent trends in interior design advocate for human-centered and participatory approaches, underscoring the importance of engaging end-users in the design process (Sanders & Stappers, 2008). Design thinking, a user-centric methodology, has emerged as particularly effective in addressing complex spatial and functional challenges by emphasizing empathy, iterative prototyping, and collaborative ideation (Brown, 2009). However, empirical explorations of design thinking's application specifically to interior environments within educational institutions remain underrepresented. This study addresses this gap by examining how design thinking can significantly enhance interior design quality and staff satisfaction within university workspaces through practical, collaborative design interventions.

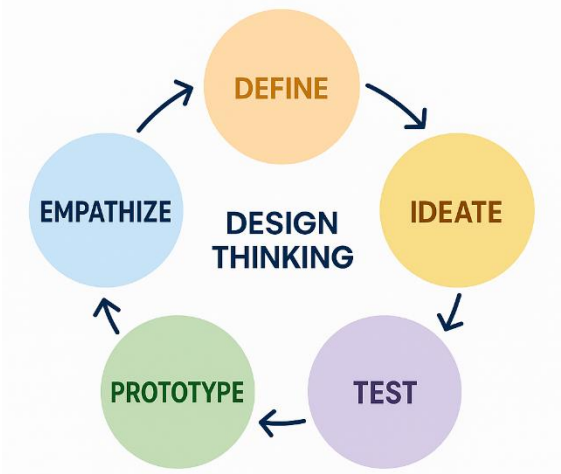

Figure (1) Design thinking diagram

Research Problem:

Despite growing awareness of the role interior design plays in supporting wellbeing and productivity, staff rooms in many academic institutions remain underutilized, uncomfortable, and poorly suited to the diverse needs of faculty. Conventional top-down design approaches often fail to reflect users' lived experiences, leading to dissatisfaction and spatial disengagement. There is a lack of empirical research on how participatory,

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design thinking-based methods can be used to improve the quality and usability of academic staff spaces.

Research Hypothesis:

Implementing a design thinking approach, figure (1) to redesign a university staff room—based on user engagement and iterative prototyping—will lead to measurable improvements in staff satisfaction, spatial functionality, and emotional connection to the environment.

Research Objective:

To investigate how applying the design thinking methodology to the redesign of an academic staff room can enhance user satisfaction, functionality, and overall spatial experience, while demonstrating the value of participatory interior design in higher education contexts.

Literature Review:

Design thinking has emerged as a transformative approach for addressing complex problems in volatile, uncertain, complex, and ambiguous (VUCA) environments, particularly in educational and organizational contexts (Royalty & Shepard, 2018; Cousins, 2018). Defined as both a mindset and a methodology, it enables human-centered innovation by embedding empathy, iterative ideation, and experimentation within problem-solving processes (Brown, 2009; Brenner et al., 2016).

A growing body of literature has examined the impact of design thinking on organizational learning, employee experience, and spatial innovation. (Bertolotti et al. 2018) emphasized the role of service design principles in enhancing organizational well-being, showing that the application of design thinking can improve employee engagement and satisfaction through user-centered redesign of workplace environments. Similarly, (Matthews 2021) illustrated how workplace innovation is increasingly tied to design thinking strategies that focus on adaptability, co-creation, and continuous feedback.

In the educational domain, (Lor 2017) offered a critical review of how design thinking has been integrated into learning environments, highlighting both its pedagogical value and the challenges of implementation. (Dunne 2018) expanded this lens by examining how institutions and organizations embed design thinking into everyday operations, not just as a process but as a core organizational capability.

Spatial and environmental psychology literature further reinforces the potential of data-driven and behavior-informed design. (Sailer et al. 2015) proposed that human behavior, spatial configuration, and environmental data must be interpreted through a design thinking lens to produce impactful space solutions. (Indergård and Hansen 2023) echoed this in their systematic review, finding that the quality of workspace environments significantly influences academic staff satisfaction and productivity.

Workplace-centered applications have also been explored through concepts like value creation and satisfaction (Lee et al., 2023) and codesign facilitation (Tsen, 2023). These studies suggest that collaborative spatial interventions can generate not only aesthetic or ergonomic improvements but also emotional engagement and team cohesion.

Finally, strategic applications of design thinking at scale have been studied in corporate innovation contexts (Cuque & Mattar, 2021), including its ability to foster team performance and sustainable innovation (Zhang et al., 2017), and in broader European workplace strategy (Seifried & Wasserbaech, 2021). Graf et al. (2020) questioned whether design thinking is best seen as a tool for strategy or as a strategy in itself, ultimately arguing for its dual potential.

Taken together, these studies establish that design thinking when combined with participatory design, environmental behavior, and workplace strategy—offers a robust framework for addressing spatial dissatisfaction in institutional settings. This paper builds upon this foundation by applying these principles to the redesign of a university staff room, co-created with users and evaluated through both qualitative and visual feedback.

Methodology:

This study employed the five-stage Design Thinking (DT) process: Empathize, Define, Ideate, Prototype, and Test. Each phase integrated qualitative feedback and iterative spatial analysis to guide the redesign of a university staff room.

1. Empathize: Understanding User Experience through a Focus Group

To initiate the design thinking process, a focused qualitative investigation was conducted to empathize with the end users—academic staff members occupying the faculty staff room. A structured focus group session was held with a diverse group of staff participants to elicit experiential narratives and behavioral insights about the existing space. The session was supported by an empathy map framework (Brown, 2009; Razzouk & Shute, 2012) as in figure (2), categorizing feedback into four domains: what users said, did, felt, and thought. This approach ensured a user-centered understanding of the environment and its shortcomings.

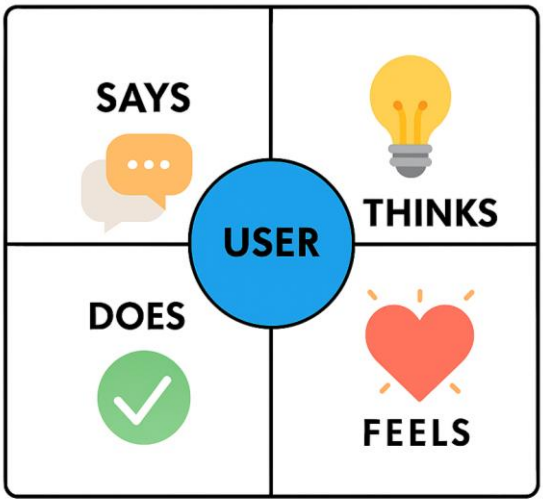

Fig. (2) Empathy map

Said: Participants frequently described the room using negative descriptors such as "cluttered," "stress-inducing," "isolating," and "uninspiring." Recurrent complaints included lack of belonging, inefficient lighting, and an absence of defined functional zones. Notable quotes included:
"The lighting is not efficient."
"There is no proper zone for focused work."
"The is mismatched chairs which feels negative."
Figure (3)

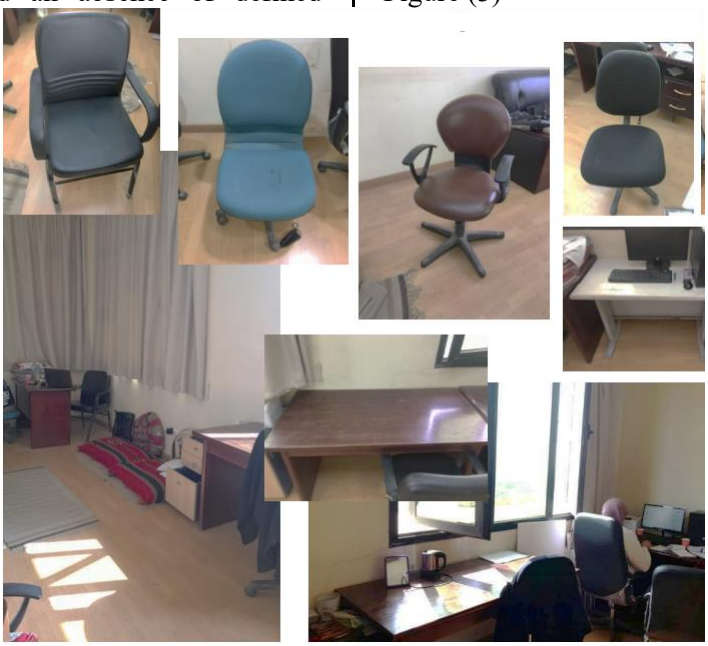

Fig. (3) Furniture types in staff room

These statements reflected not only dissatisfaction with basic spatial conditions but also a deeper emotional disconnection from the space,

Did: Ethnographic observation during the workshop and informal usage logs revealed that most staff avoided the room except for short breaks or brief administrative tasks. There was a clear reluctance to engage in prolonged or collaborative use. Instead, many preferred to work in more private offices or at home. Social interaction was minimal, and the space failed to foster community or collegial exchange.

Felt: The emotional responses captured pointed to a significant impact on staff well-being. Participants articulated feelings of demotivation, fatigue, and detachment, with remarks such as:
"I feel sleepy here."
"I'd rather work from home."
"This space makes me feel dull."
These sentiments aligned with previous research linking poor interior conditions to decreased workplace morale and productivity (Vischer, 2008; Indergård & Hansen, 2023).

This phase confirmed the need for a reimagined spatial solution grounded in empathy, wellness, and functional design. The insights gathered directly informed the Define phase by shaping the design problem from a user-centered perspective.

These findings provided the emotional and functional foundation for framing the design

problem addressed in the subsequent phases. Figure (4) shows the furniture distribution in the staff room.

2. Define: Articulating the Core Design Challenge

Based on the insights gathered during the empathize phase, the Define phase focused on translating user concerns shown in figure (4) into a clear and actionable design problem. Drawing from both verbal expressions and observed behaviors, a problem statement was formulated using a human-centered lens:

"Academic staff at the faculty lack an inclusive, comfortable, and motivating shared workspace, resulting in decreased well-being, limited collaboration, and avoidance of the environment."

To structure the problem definition as shown in figure (5)(6)(7), a problem tree was developed. Root causes identified included:

- Inadequate zoning (no separation between focused work and social use)
- Poor environmental conditions (lighting, clutter, ventilation)
- Lack of ergonomic and flexible furniture

Fig. (4) Existing furniture distribution
Absence of visual aesthetic.

Fig.(5) 3D of existing furniture distribution

These issues were contextualized within the literature on spatial satisfaction and behavioral workplace design (Sailer et al., 2015; Vischer, 2008), reinforcing the importance of psychological comfort, usability, and identity within academic staff environments.

The goal was therefore reframed as a design opportunity:

"To redesign the academic staff room into a multifunctional, user-centered space that fosters comfort, communication, and focused productivity."

3. Ideate: Generating User-Centered Spatial Solutions:

In the ideate phase, conceptual development began by reimagining the spatial layout using both manual sketches and digital modeling tools (SketchUp). Ideation was grounded in the needs articulated by staff during the empathy phase, particularly for defined zones, ergonomic comfort,personalization, aesthetics and enhanced natural light.

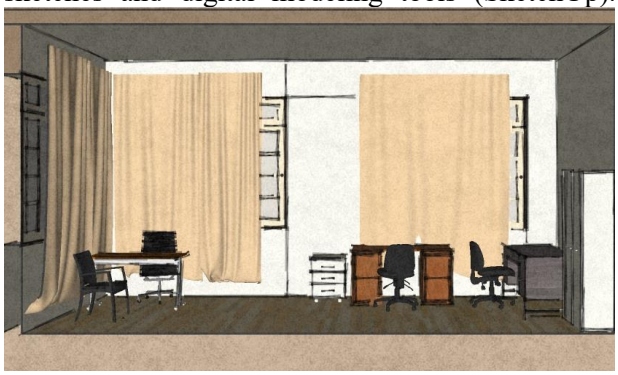

Fig. (6) 3D Elevation A

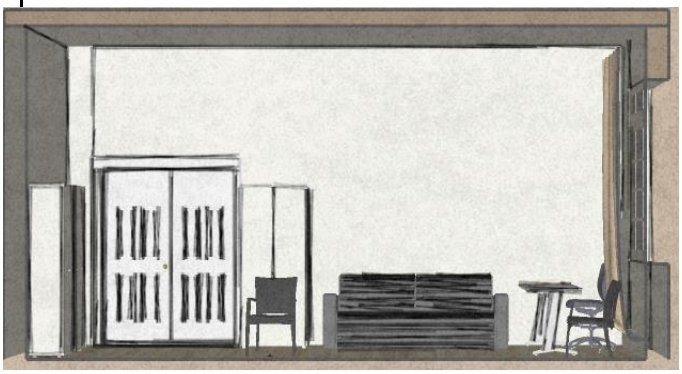

Fig. (7) 3D Elevation B

Several low-fidelity spatial diagrams were drafted to explore various layouts using existing furniture. This allowed for immediate prototyping without new procurement in the prototype, addressing feasibility and sustainability concerns. In parallel, product research was conducted to identify modular and inclusive furniture options suitable for future renovation phases in the below design figure(8) . These ideas were categorized into three solution areas:

1- Zoning Strategy:

- Creation of distinct zones for focus work, relaxation, and informal meetings.
- Relocation of high storage units to free up window areas for workstations.
- Incorporation of semi-private areas using partitions and furniture backings.

2- Furniture Redistribution and Selection:

- Optimized use of available furniture through reallocation.
- Addition of low-cost ergonomic chairs and desking in high-use areas.
- Future options included modular desks and acoustic panels.

3- Mood and Materiality:

- Enhanced color palette to increase brightness and mood elevation.
- Exploration of biophilic elements such as indoor plants and daylight access.
- Consideration of quiet, non-reflective surfaces and soft textures for comfort.

Fig.(8) Proposed 3D layout illustrating future furniture upgrades and spatial enhancements for future renovation

To evaluate feasibility, these concepts were built into a 3D model and visualized using a simple-style rendering approach that allowed for iterative feedback. These visuals helped communicate

design intent clearly to stakeholders and informed the next stage of low-cost prototyping.

Using SketchUp software, as illustrated in Figures (9) and (10), a detailed three-dimensional model of the proposed workspace was developed. This digital prototype enabled a dynamic simulation of spatial modifications, allowing the researcher to visualize real-time adjustments in furniture layout, circulation patterns, and user zones. The model was actively employed during participatory feedback sessions with academic staff, serving as an interactive tool to test ideas, gather qualitative input, and collaboratively.

Fig.(9) Proposed elevation B showing enhanced layout

Fig.(10) Proposed elevation A showing enhanced layout

Fig.(11) Proposed elevation C showing enhanced layout

Fig.(12) Design proposal render illustrating enhanced interior design elements

Prototype: A No-cost prototype was implemented using available furniture within the faculty. Layouts were rearranged to support multiple functions, and visual partitions created zones for work and socialization. Design boards and mock-ups were used to visualize proposed layouts and color schemes. Selected materials and accessories (like soft seating and plants) were temporarily introduced to simulate intended changes, as shown in figure (13) and (14).

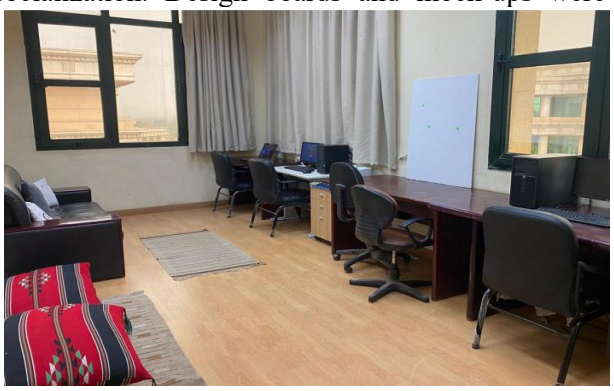

Fig.(13) Prototype showing rearranged furniture

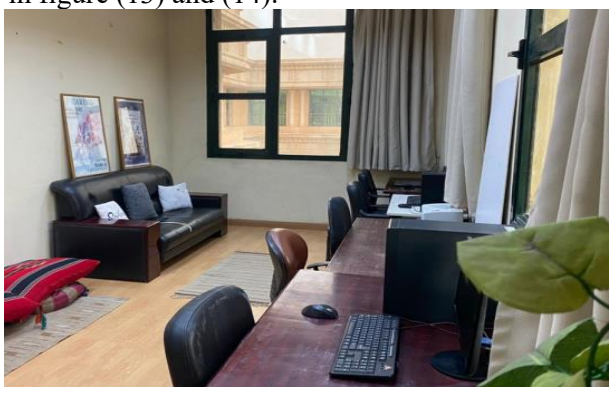

Fig.(14) Prototype showing rearranged furniture to improve comfort and functionality.

Test: The redesigned layout was presented to staff, who interacted with the space over a two-week trial period. Feedback was overwhelmingly positive. Staff shared the following impressions:

- "I feel relieved and more focused."
- "I want to work now in this space."
- "The atmosphere is really motivating."
- "I enjoy working here—it feels organized and welcoming."
- "Lighting and zoning made a huge difference."

These responses confirmed a significant shift in user experience. In response to minor issues raised, further refinements were implemented, such as optimizing desk placement to enhance natural lighting. The Test phase validated the effectiveness of user-centered design and demonstrated the value of co-creation in transforming institutional spaces.

Findings:

The findings reflect the transformation of the university staff room through the design thinking process. Data was gathered from surveys, empathy mapping, observation, and post-design feedback.

Pre-Redesign Survey Results:

- 95% of staff reported the room was demotivating and disorganized.
- 90% lacked access to personal or functional workspaces.
- 85% cited lighting and color as visually fatiguing.
- 80% found the space noisy and distracting.
- 70% requested clearer zoning and more privacy.
- 60% wanted aesthetic improvements and personal storage.

Qualitative insights echoed this dissatisfaction: the room was described as "dull," "isolating," and "not motivating," with many avoiding its use altogether. Circulation was obstructed, acoustics were poor, and visual disorganization added to user discomfort.

Design Response:

The co-design process addressed key challenges:

- Redefined zones for focused work, social interaction, and relaxation.
- Rearranged furniture to improve light access and circulation.
- Introduced calming colors, natural textures, and low-cost accessories.
- Designed future-ready furniture scenarios using 3D SketchUp modeling.

Post-Implementation Feedback:

Two weeks after testing the revised layout, staff responses included:

- "I feel relieved and more focused."
- "I want to work now."
- "It feels like we were finally considered."
- "I enjoy spending time here now."

The contrast in emotional tone—from avoidance to appreciation—demonstrates a measurable improvement in spatial quality and user satisfaction. This validates the effectiveness of design thinking in enhancing staff experiences through participatory interior design.

Discussion:

The findings of this study affirm the capacity of design thinking to address spatial dissatisfaction and psychological disengagement in institutional environments through participatory, user-centered design. The positive transformation of the university staff room demonstrates how iterative, co-designed interventions can reframe interior design not merely as a functional endeavor, but as a tool for emotional and professional empowerment.

By aligning closely with users' emotional and practical needs, the redesign resolved major environmental shortcomings identified during the Empathize phase. These included poor lighting, uninviting colors, limited workspace functionality, and spatial disorganization. Post-intervention feedback—highlighting feelings of focus, comfort, and motivation—demonstrates that even low-cost spatial changes, when grounded in empathy, can have disproportionately high impact on user experience.

The study's results also reinforce theoretical frameworks in environmental behavior and activity-based workspace design. As suggested by Vischer (2008) and (Appel-Meulenbroek et al. 2011), spatial affordances must align with behavioral and psychological expectations. In this case, the incorporation of flexible zones, natural light, personalized storage, and quiet areas created an environment more conducive to both task completion and informal social interaction.

Furthermore, the participatory nature of the design process enhanced user ownership and acceptance. Staff involvement in ideation and feedback cycles built a sense of agency, reinforcing (Charles 2022) and (Sanders & Stappers' 2008) arguments that co-creation leads to deeper emotional investment and longer-lasting outcomes.

Limitations of this study include the project's confinement to a single faculty and reliance on short-term feedback. Longitudinal evaluation and broader cross-campus implementation could yield additional insights into scalability and sustainability. Future research could examine correlations between redesigned staff environments and metrics such as absenteeism, retention, or productivity.

Overall, the project demonstrates that design thinking, when employed within an interior design framework, serves as an effective strategy for improving institutional environments through inclusion, empathy, and spatial intelligence.

Recommendations:

Based on the outcomes of this study, which employed the design thinking methodology to enhance the functionality and emotional experience of a university staff room, the following recommendations are proposed:

1- **Adopt Human-Centered Interior Design Practices** Institutions should prioritize

participatory design approaches that actively involve end-users in identifying spatial challenges and co-developing design solutions. Empathizing with users early in the design process ensures spaces are tailored to psychological and practical needs.

2- **Standardize Furniture Selection for Visual Coherence and Comfort** A unified approach to furniture procurement is essential. The initial user feedback revealed negative emotional responses to the disjointed mix of furniture styles, which contributed to perceptions of disorder and discomfort. Future renovations should include ergonomically consistent, size-appropriate furnishings that support a cohesive interior identity.

3- **Incorporate Biophilic and Sensory Enhancements** Integrating plant partitions, natural light access, soft textures, and acoustic elements can significantly improve staff well-being. Even with limited budgets, reconfiguring existing elements and introducing modular green dividers—proven effective in the prototype—can uplift spatial ambiance.

4- **Implement Flexible Zoning for Multi-Functional Use** Workspaces should allow for both collaborative interaction and focused, individual work. Zoning through layout, movable furniture, and visual cues enables users to intuitively select spaces that align with their immediate needs.

5- **Institutionalize Iterative Design Evaluation** Interior space planning in academic environments should move toward a cyclical model of feedback, testing, and refinement. Regular user surveys and design feedback loops—mirroring the test-and-reflect phases of design thinking—should become embedded within facilities management protocols.

6- **Promote Interdisciplinary Collaboration** Universities should foster partnerships between designers, administrative stakeholders, and end-users to ensure spatial solutions align with pedagogical goals, operational needs, and user experience principles.

7- **Future Research and Scalability** This case study serves as a replicable model for other academic environments facing similar dissatisfaction with shared interior spaces. Broader institutional adoption and cross-contextual research can further validate the efficacy of the design thinking framework in spatial interventions.

Conclusion:

This study demonstrated that applying the design thinking methodology—through empathizing, co-defining problems, ideating, prototyping, and testing—can drive significant improvements in institutional interior spaces. By engaging staff through participatory methods and iterative redesign, the university staff room was transformed into a more functional, emotionally supportive, and inclusive environment.

The intervention successfully addressed both tangible spatial limitations and intangible user needs such as motivation, comfort, and social connection. Staff involvement at every stage fostered a sense of ownership, reinforcing the idea that co-creation is not only a design strategy but a tool for institutional engagement and empowerment.

This research contributes to a growing body of evidence supporting human-centered and data-informed design practices in the field of interior architecture. It also responds to a gap in existing literature by focusing on academic staff environments—an often-overlooked context in workplace design discourse.

Moreover, the study affirms that impactful spatial change does not require large-scale resources; rather, meaningful transformation can be achieved through strategic reconfiguration of existing assets. These findings hold value for academic institutions seeking cost-effective, evidence-based approaches to workplace enhancement.

Future research should investigate the long-term psychological and organizational impacts of such interventions, including their influence on staff well-being, productivity, and institutional culture. Expanding this methodology across various departments or institutional settings may help validate its transferability and build a stronger case for design thinking as a systemic tool in educational interior design.

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