

A THREE-STAGE UX PROCESS: INTEGRATING HUMAN-CENTERED DESIGN METHODS IN DESIGN EDUCATION AND MANAGERIAL TRAINING

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ABSTRACT

Technology-driven approaches often overshadow user needs, highlighting the necessity of a human-centred perspective in education and industry. Technology-centric frameworks often overlook essential human factors crucial for accessibility and relevance. This paper introduces a three-stage User Experience (UX) process aimed at implementing Human-Centred Design (HCD) methods in the education of design students and the continuous training of managers in UX management.

The proposed three-stage UX process emphasises an iterative framework consisting of three key phases: Context, Concept and Implementation. The Context phase focuses on deep user research to understand user behaviours, motivations and mental models. The Concept phase involves the ideation and refinement of design solutions aligned with user goals and needs. The Implementation phase centres on usability testing, feedback-driven iteration and the final refinement of solutions. This structured approach equips both design students and professionals in continuous education to focus on the user needs and thereby creating impactful solutions.

Drawing on the author's experience teaching UX design to design students and UX management to managers, the paper demonstrates how this process fosters HCD thinking, promotes empathy and cultivates a collaborative mindset. Additionally, it underscores the demand for such an approach in industries, where user-centred design is increasingly recognised as a critical strategic asset. This process equips students and professionals to create impactful, user-centred innovations for long-term success.

Keywords: User experience design, Human Centred Design, design tools, design education, UX management

1 INTRODUCTION

The field of design has evolved beyond its traditional focus on aesthetics and functionality to engage with complex challenges across education and industry. As organisations increasingly recognise the value of user-centred approaches, there is a growing need to integrate Human-Centred Design (HCD) methods into both design education and managerial training. This shift requires expanding conventional design practices to include User Experience (UX) methodologies that prioritise user needs, systemic thinking, and interdisciplinary collaboration.

Holistic research within UX education and training considers multiple dimensions—cultural, social, economic, and environmental—ensuring that design solutions are both inclusive and sustainable. Moving beyond usability or market-driven design, this approach integrates systemic design principles, acknowledging the interrelations between human behaviour, technology, and broader socio-ecological systems [1; 2]. By embedding UX methods within a structured three-stage process—Context, Concept, and Implementation—both design students and professionals gain the necessary skills to develop solutions that are user-centred, strategically relevant, and adaptable to evolving industry needs.

This paper defines UX in the context of HCD, followed by an exploration of the three-stage UX process and its application in design education and managerial training. Finally, it highlights the importance of holistic UX approaches in preparing future designers and managers to navigate complex, real-world challenges.

2 UX DESIGN: A DEFINITION

When design students and managers are first introduced to the concept of User Experience (UX), they often struggle to grasp its definition (UX vs. UI) and the importance of the framework in creating effective solutions. Over recent years, UX design has gained significant relevance in both design education and various industries.

The understanding of UX is shaped by personal backgrounds, industries, and the specific interests of researchers, leading to diverse interpretations of the term [3]. In the context of human-technology interaction, UX plays a key role in successful product design, defined as a dynamic, context-dependent, and subjective process [4]. Forlizzi and Battarbee [5] describe UX as an evolving relationship between the user and the product over time, emphasising not only immediate usability but also emotional and experiential aspects. Hassenzahl [6] further explores the dual nature of UX, distinguishing between pragmatic (functional) and hedonic (emotional) qualities. The growing importance of UX in recent years has also contributed to the development of professional organisations, reflecting the shift from a narrow focus on usability to a broader understanding of user experience [7]. In Human-Computer Interaction (HCI), UX is described as the interaction of individual perception, emotion, cognition, motivation and action, influenced by interactions with place, time, people and objects [8].

These definitions align with both the authors' perspectives and the International Organisation for Standardisation [9] which defines UX as the perceptions and responses of individuals resulting from the anticipated or actual use of products, systems or services. The UX teaching framework at HTW Berlin builds upon these foundational definitions to offer a comprehensive understanding. UX encompasses emotions, beliefs, preferences, sensations, physical and psychological responses, behaviours and abilities that occur before, during or after use, all influenced by the interactive system, the user and the context (Figure 1).

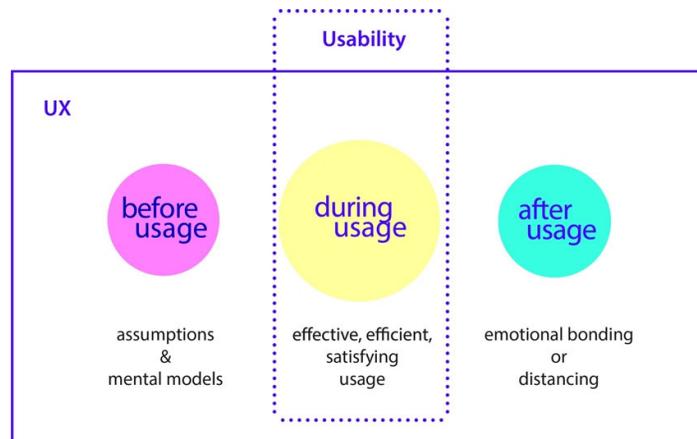


Figure 1. UX framework. Adapted from ISO 9241-210:2019

This definition is crucial when educating design students and managers about UX, as it highlights the need for a holistic perspective. UX goes beyond the brief interaction typically associated with usability. First, users come with pre-existing assumptions and mental models before purchasing or using a product. These mental models are shaped by past product experiences and socialisation, such as reading from left to right or using door handles (see Norman, 2013). Second, during use, the user assesses whether the product is efficient and satisfying, which is essentially what usability refers to. The third phase, as outlined by ISO [9], focuses on the post-use experience – specifically, whether the user forms an emotional connection due to positive usability or feels detached because of negative usability. The perception of UX, whether positive or negative, depends on the entire process, and thorough examination or research of these individual phases is key. Every product in a user's life generates a UX, as any product that involves interaction with the user or is used by someone creates an experience. Therefore, design students are introduced to holistic UX research through this model (Figure 1).

Despite this, some design students and managers as well researchers struggle to differentiate between UX and usability, as the two concepts overlap in many aspects, especially in terms of measurement [10]. Therefore, it is crucial to clarify this distinction in education, emphasising that UX is not the same as User Interface (UI). UX design focuses on the overall experience a user has while interacting with a product or service, incorporating usability, accessibility, and the emotional responses triggered during

the interaction [10]. It involves understanding user needs and behaviours while optimising the product’s functionality and efficiency [6]. In contrast, UI design specifically addresses the visual and interactive aspects of a product, such as layout, colours, typography, and other design elements [11]. While UX defines the user's overall experience and journey, UI brings that experience to life through aesthetic and interactive elements. In essence, UI is a component of UX, as a well-designed interface greatly enhances the overall user experience but does not represent the entire process of interaction [12].

3 UX PROCESS AND METHODS FOR TEACHING DESIGN STUDENTS AND UX MANAGERS

In today’s rapidly evolving, technology-driven industries, the need to prioritise User Experience (UX) often gets overshadowed by the fast pace of innovation. As the challenges of modern society become more complex, there is a pressing need for a UX mindset and the integration of UX tools in both the design process and the education of design students and managers [13]. This emphasis on UX redirects focus from mere technological advancement to the critical understanding and addressing of user needs, which is essential for developing purposeful products that resonate with diverse populations. UX design focuses on empathising with users and using their experiences as the foundation for developing effective solutions [14]. By fostering a deep understanding of UX principles within design education, both design students and managers are better prepared to address the pressing social challenges of today and the future.

To introduce design students and managers to the UX process, the author employs a Venn diagram of Human-Centered Design (HCD) as a core tool, defined by three key areas: Desirability (what the user needs and wants), Feasibility (what is financially achievable), and Viability (how it can be technically or aesthetically implemented). HCD serves as the basis for UX and introduces a four-stage product development process: Understand, Define, Design, and Evaluate. This process involves conducting research and analysis of the user’s needs, mental models, and usage patterns to define the required functions, followed by design, and then testing the outcome. These four stages are meant to be iterative and interactive.

Building upon the HCD framework and the UX Framework of ISO 9241 standards (Figure 1), the author has developed and tested a three-stage UX process (Context, Concept, and Implementation phases; Figure 2) through a practice-based research approach conducted over the past decade in both industry and higher education.

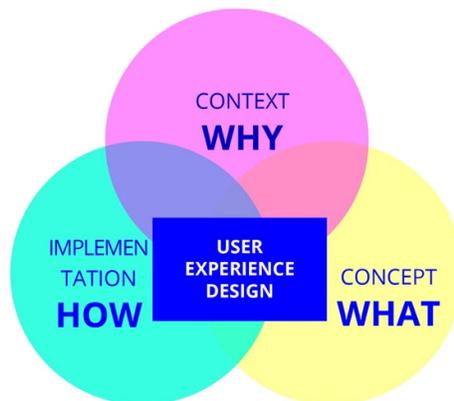


Figure 2. Three-stage UX process

The framework emerged from iterative application and reflection within real-world design projects working as a designer and was subsequently integrated in design education and into UX management courses in continuous education. The process was continuously refined through cycles of action and reflection, supported by feedback from design students and industry professionals. This approach aligns with principles of action research and experiential learning, demonstrating the framework’s practical relevance and educational value.

In the Context phase, design students analyse “WHY” questions to understand users’ needs and behaviours within their specific context. During the Concept phase, they explore “WHAT” should be designed by defining user goals and intended actions. In the Implementation phase, the focus shifts to

“HOW” the design should take shape, emphasising form and interaction. Similar to human-centred design (HCD), this process is iterative, supporting experimentation and the constructive role of failure. In the WHY phase, key methods include user observations, qualitative interviews, questionnaires, diaries, cultural probes, user journeys, empathy mapping, and the involvement of “design mentors” [15]. Design mentors (Figure 3) are users with no design background who collaborate with designers to share their experiences and desires, enriching the project as real personas (not marketing personas). This method extends the real persona approach by involving users as design mentors throughout the entire project—from research to the final product. The design mentor contributes their user knowledge and insights into the project, enhancing the design process through co-creation. They are not involved temporarily, but participate in the project across all stages, providing valuable perspectives.



Figure 3. Design Mentor in the UX process. (F. Deraed, 2019)

Students use the Real Persona Canvas to explore and articulate users' needs in detail. To deepen their understanding of the underlying psychological needs, the author incorporates Need Cards from interaction design, drawing on the work of Hassenzahl and Diefenbach [16], which is based on Sheldon’s self-determination theory [17]. These cards (Figure 4) highlight eight fundamental human needs: Autonomy, Competence, Relatedness, Stimulation, Popularity, Physicality, Meaning, and Security. By integrating these concepts, students gain a more comprehensive perspective on user motivations, enabling them to design more meaningful and user-centred experiences.

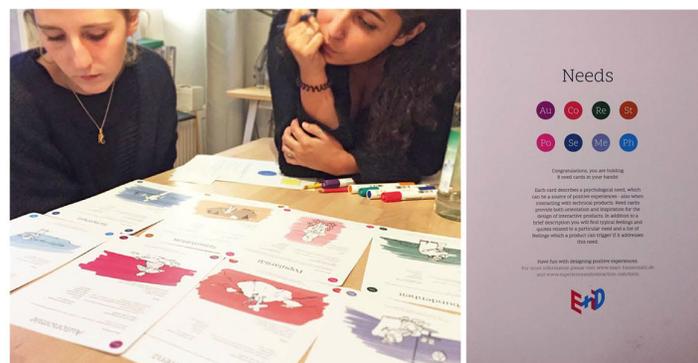


Figure 4. Need Cards by E&ID Tools by Diefenbach et al.

Over the past decades, the author has had highly positive experiences using these need cards in both educational and professional settings. The cards help to move beyond assumptions and articulate user needs in an evidence-based manner. By providing a structured and accessible framework grounded in psychological theory, the cards allow critical reflection on user needs and motivations. In educational contexts, they serve as prompts to guide user interviews, observations, and persona development. In industry settings, they foster shared understanding and objective discussion across interdisciplinary teams.

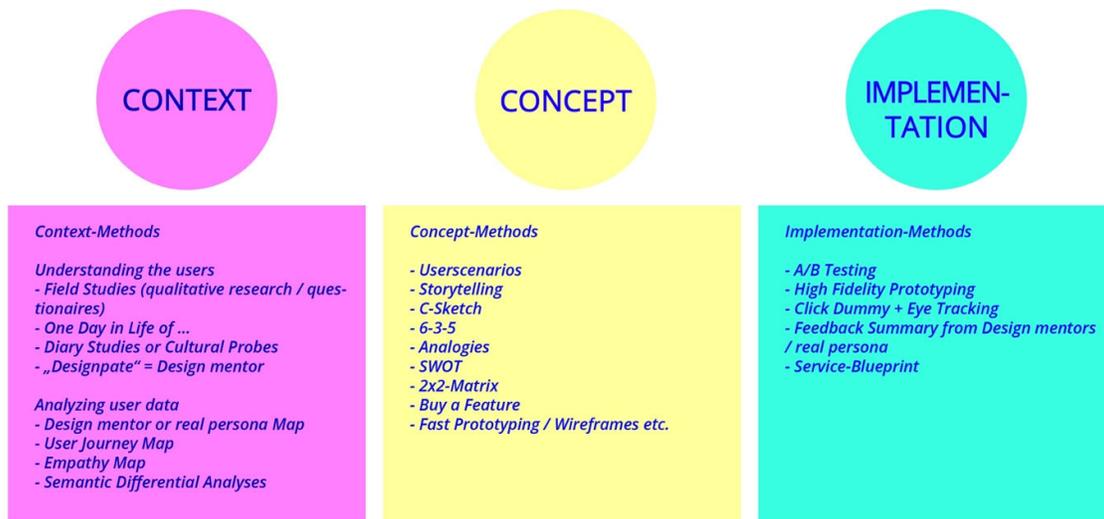


Figure 5. Key methods in the three phases

In the second phase “Concept” (WHAT), key methods include brainstorming, idea mapping and storytelling with user scenarios to explore creative solutions. Tools like user journeys and stakeholder mapping help design students visualise the user’s experience and identify all involved parties. Decision-making is facilitated using tools such as the 2x2 matrix, allowing design students to prioritise ideas based on impact and feasibility, followed by fast prototyping to quickly test and refine their concepts. In the third phase “Implementation” (HOW), design students focus on evaluating their final designs, ensuring that the proposed solutions meet user needs and align with the project’s goals through usability testing and feedback loops.

The author's three-stage UX process and its associated methods underscore the importance of design students first understanding the “why” behind each design challenge. By thoroughly analysing users’ contexts, needs, and motivations in the initial phase, students are better positioned to develop solutions that are both meaningful and socially inclusive. This user-centred approach, combined with stage-specific methods, helps ensure that resulting designs promote social inclusion by aligning closely with the lived experiences of diverse user groups.

4 CONCLUSIONS

This paper has examined how the integration of holistic research methods with User Experience (UX) can deepen the understanding of user needs in design and management. The proposed framework underscores the significance of incorporating these approaches into design education and continuous professional development for managers, emphasising that successful designers and UX managers must transcend aesthetics and functionality to address the human and systemic factors that influence design. By guiding students through a structured, iterative process that begins with empathy and a deep understanding of user contexts, the author's three-stage UX process underscores the necessity of asking “why” behind every design challenge or briefing. Gaining insight into users' needs, motivations, and mental models allows design students and managers to develop solutions that are not only functional but also deeply meaningful. The methodologies presented, offer powerful tools for navigating complex socio-ecological challenges.

The author's approach ensures that design students and managers can design interventions that are both sustainable and scalable, addressing global issues. By providing the right tools and frameworks, this method empowers design students and managers not only to meet individual user needs effectively but also to develop solutions that contribute to larger, interconnected systems in human society.

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