

KAVRA as a UX-based digital fashion learning platform: Integrating creative self-expression and brand identity communication

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Abstract: This study examined the development and evaluation of KAVRA as a UX-based digital fashion learning platform that integrates creative self-expression and brand identity communication. The research addressed the limitations of existing fashion design tools, which often present high technical barriers and lack support for identity expression and communicative interaction. A design thinking methodology was employed, involving iterative stages of empathize, define, ideate, prototype, and test, with participants consisting of undergraduate fashion design students and industry practitioners. The findings showed that KAVRA achieved high usability performance across key dimensions, including navigation ease (88%), visual accessibility (85%), time efficiency (90%), information clarity (82%), intuitive design (82%), and overall user satisfaction (82%). These results indicated that the platform effectively supports digital fashion learning by reducing cognitive load and enabling efficient task completion. Beyond functional usability, the platform also facilitated user interaction and engagement through intuitive visual design and communicative interface structures. Importantly, the study demonstrated that UX functions as a strategic communication interface that enables users to express creative identity and construct personal brand meaning through digital fashion design activities. Features such as 3D visualization, design customization, and collaborative interaction support reflective design processes and social engagement. The study concludes that UX-based platforms can serve not only as instructional media but also as communicative environments that integrate learning, interaction, and identity construction. These findings provide theoretical and practical implications for the development of future digital learning systems in creative domains.

Keywords: UX design; digital fashion learning; brand identity communication; creative self-expression; human-computer interaction

1. Introduction

Digital transformation has fundamentally reshaped how knowledge is transmitted, how creative competencies are developed, and how users interact with technology mediated learning environments. In the domains of art, design, and creative education, computer-based instructional media have become central to supporting visual exploration, self-directed learning, simulation-based practice, and collaborative engagement. These developments are particularly relevant for younger learners who are accustomed to digital interfaces and expect learning environments to be flexible, interactive, and visually responsive (Sustiawati et al., 2024). Instructional media, in this context, no longer serve merely as information delivery channels; they also function as environments in which users explore concepts, construct meaning, and develop creative outputs through technology supported interaction.

A parallel transformation is unfolding within the fashion sector, where digital technologies including artificial intelligence, virtual reality, three-dimensional modelling, and interactive prototyping are increasingly integrated into design, production, marketing, and consumer engagement. Digital fashion technologies allow users and designers to visualize garments, personalize creative outputs, and

communicate visual identity through fashion artefacts ([Thadepalli & Choudhary, 2024](#)). This integration has fostered more participatory and personalized forms of design practice, in which users are not merely passive consumers but active contributors to the creative process. In educational contexts, these developments create opportunities to frame fashion design not only as a technical activity but also as a communicative, visual, and identity forming practice. Accordingly, digital fashion learning platforms can be understood as a productive intersection between computer-based instructional media, human computer interaction (HCI), and brand identity communication.

Despite these opportunities, novice users and non-designers continue to encounter significant barriers when engaging with existing professional fashion design software. Tools such as Adobe Illustrator and CLO3D offer advanced capabilities but require high levels of technical competence, considerable financial investment, and intensive training. Prior research demonstrates that while such tools can improve creativity and design visualization, they simultaneously present steep learning curves and presuppose levels of infrastructure and educator readiness that are not universally available ([Papahristou & Zolota Tatsi, 2024](#)). These barriers are especially pronounced for younger users who possess creative ideas but lack the technical fluency to translate them into evaluable visual designs, causing many concepts to stall at the ideation stage without progressing toward visual evaluation, collaborative feedback, or product realization.

This problem is not solely technical but fundamentally communicative. Fashion design is intrinsically linked to self-expression, identity construction, and visual communication. When users cannot visualize their ideas, articulate design intentions, or receive meaningful feedback, their capacity to develop a personal visual identity is simultaneously constrained. Research on virtual prototyping has shown that the transition from traditional to digital design processes remains challenging when platforms fail to provide accessible interaction and clear guidance ([E & N, 2017](#)). Emerging tools such as Fash Sketch demonstrate that even when generative technology simplifies sketching, users must still adapt to new interaction patterns and digital workflows ([Nguyen-Truc et al., 2025](#)). Taken together, these challenges indicate the need for a digital fashion learning platform that is not only technically functional but pedagogically accessible and communicatively meaningful.

A UX-based approach offers a promising response to these challenges by simplifying the fashion design learning process through intuitive, visual, and user-centered interaction design. Effective learning platforms, from an HCI perspective, must reduce cognitive load, support clear navigation, and deliver meaningful feedback. Research in computer-based instructional media consistently demonstrates that usability, visual organization, and interface efficiency are critical determinants of successful digital learning outcomes ([Miya & Govender, 2022](#); [Panda, 2024](#)). In fashion learning, these principles are especially important because users must simultaneously understand design procedures, explore visual alternatives, evaluate garment appearances, and communicate design decisions. A well-structured UX framework thus guides novice users from creative intention to design execution through an accessible and scaffolded learning pathway.

Specific technological features can further strengthen this learning trajectory. The integration of digital design tools, three-dimensional visualization, collaborative communication, and ordering flows creates a comprehensive learning ecosystem for fashion design. Prior research indicates that 3D virtual prototyping enhances students' ability to explore and develop fashion ideas while supporting teamwork, creativity, and innovation ([Papahristou & Zolota Tatsi, 2024](#)). AI supported sketching and co-creation platforms facilitate iterative design by enabling continuous feedback loops ([Mani Nandini Sharma et al., 2025](#); [Nguyen-Truc et al., 2025](#)), and interactive 3D systems have been found to increase user enjoyment while reducing perceived risk in design decision-making ([Su et al., 2024](#)). These findings collectively confirm that effective digital fashion learning platforms must extend beyond drawing tools to encompass visual evaluation, collaboration, and decision-making support.

The present study introduces KAVRA, a mobile application prototype developed as a UX based digital fashion learning platform. Designed to enable users including non-designers to create garments creatively, visualize outputs in three dimensions, collaborate through integrated chat, and advance designs toward product ordering, KAVRA incorporates five core features: Design, 3D Preview, Showcase, Chat, and Order. These constitute an integrated fashion design learning workflow in which users create and modify customized fashion concepts (Design), inspect garments from multiple angles (3D Preview), display and share outputs (Showcase), communicate with designers or production collaborators (Chat), and connect design activity with pathways toward product realization (Order). In this sense, KAVRA is positioned not merely as a fashion customization tool but as a computer-based instructional medium that simultaneously supports learning, interaction, and visual identity expression.

Although prior scholarship has examined UI/UX design, e-learning systems, digital prototyping, 3D visualization, and interactive fashion technologies as discrete domains, a substantive research gap persists at their intersection identifiable across three dimensions. First, existing UX-based learning platform studies primarily evaluate functional usability without considering the communicative and identity forming dimensions of user experience ([Miya & Govender, 2022](#); [Panda, 2024](#); [Putra & Kristiana, 2025](#)), treating usability as a technical construct rather than a communicative process. Second, digital fashion technology research foregrounds design innovation, visualization accuracy, production efficiency, or sustainability outcomes without integrating pedagogical scaffolding or brand communication theory, leaving the identity-oriented dimensions of digital fashion practice theoretically underexplored ([Lin & Ingaramo, 2024](#); [Nguyen-Truc et al., 2025](#)). Third, communication branding scholarship typically examines identity at the organizational level rarely investigating how individual users construct personal brand identity through UX-mediated creative platforms ([Khedher, 2014](#); [Peters, 1997](#)). This tripartite gap spanning instructional media, HCI, and communication branding constitutes the central problem this study addresses.

The present study makes a threefold novelty contribution in direct response to each dimension of this gap. First, it introduces KAVRA as a platform simultaneously operating as a computer-based instructional medium, an HCI system, and a brand communication environment a tripartite conceptualization absent from prior literature. Second, it proposes a novel integrative theoretical framework reconceptualizing UX not merely as a technical construct but as a strategic communication interface through which users engage in learning, articulate creative self-expression, and construct personal brand identity explicitly bridging HCI, instructional media, and communication branding into a coherent model ([Hassenzahl, 2010](#); [Norman, 2016](#)). Third, it provides mixed methods empirical evidence, drawn from fashion design students and industry practitioners, validating this reconceptualized UX framework within a real-world digital fashion learning context. Unlike prior studies evaluating digital fashion tools or e-learning platforms from singular disciplinary standpoints, this research demonstrates that UX design choices carry simultaneous implications for learning effectiveness, interaction quality, and identity expression.

Accordingly, this study pursues three interrelated aims: (1) to design and evaluate KAVRA as a UX-based digital fashion learning platform integrating creative self-expression and brand identity communication; (2) to examine how the UX architecture of a digital fashion platform functions as a communicative infrastructure simultaneously mediating learning, interaction, and brand identity construction; and (3) to propose and validate an interdisciplinary framework bridging HCI, computer-based instructional media, and communication branding. The study's scope is confined to the design and usability evaluation of the KAVRA high-fidelity prototype, yet its theoretical contributions extend across three domains: computer-based instructional media (supporting digital fashion learning through UX scaffolding), HCI (examining UX/UI design, user journey mapping, prototyping, and usability), and communication branding (positioning fashion customization as a medium for self-expression, personal branding, and visual identity communication).

2. Material and methods

2.1 Theoretical framework

2.1.1 Human-computer interaction and user experience design

Human-Computer Interaction (HCI) provides the primary theoretical lens through which the design and evaluation of KAVRA is understood. Within HCI scholarship, user experience (UX) has evolved from a narrow focus on task efficiency and error reduction toward a more holistic conception encompassing aesthetic, emotional, and meaning making dimensions of engagement theory of design identifies three levels of cognitive engagement the visceral level (immediate aesthetic perception), the behavioural level (usability of interaction), and the reflective level (interpretation, self-image, and attributed meaning). These levels apply directly to digital learning platform design, where interface structure must guide users through complex tasks while stimulating engagement and supporting reflective evaluation ([Hassenzahl, 2010](#); [Norman, 2016](#)).

According [Hassenzahl \(2010\)](#) experiential model refines this understanding by distinguishing pragmatic quality a system's capacity for effective and efficient task support from hedonic quality its capacity to stimulate, provide novelty, and support identity expression. This distinction is central to the present study: KAVRA is designed to support functional fashion design tasks (pragmatic quality) while simultaneously enabling aesthetic self-expression, personal visual identity construction, and creative satisfaction (hedonic quality). Usability dimensions such as navigation clarity, visual accessibility, and time efficiency thus constitute communicative properties of the interface shaping how users interpret affordances and engage with system functionalities. Affordance theory [Gibson \(2014\)](#) and [Norman \(2016\)](#) further underscores this communicative dimension: effective affordances signal available actions, guide behaviour, and reduce interaction effort essential in a learning context where users must simultaneously manage technical, visual, and conceptual demands.

2.1.2 Computer-based instructional media and cognitive load theory

Computer-based instructional media encompass digital systems facilitating learning through interactive, multimodal, and technology mediated environments ([Miya & Govender, 2022](#); [Panda, 2024](#)). Effective instructional media are characterized by usability, interactivity, visual clarity, and accessibility properties determining whether users can engage meaningfully with learning content. In creative disciplines such as fashion design, these properties are especially critical because learners must simultaneously process visual, technical, and conceptual information while navigating unfamiliar software. Prior research consistently demonstrates that instructional media quality significantly influences user engagement, knowledge acquisition, and learning satisfaction ([Sustiawati et al., 2024](#)).

Cognitive Load Theory (CLT), developed by [Sweller \(2023\)](#), provides the pedagogical mechanism through which this study understands the interface learning relationship. CLT distinguishes three cognitive load types: intrinsic load (complexity inherent in the learning content), extraneous load (complexity arising from poorly designed instruction or interface elements), and germane load (mental effort invested in schema formation and deep learning). Well-designed instructional media minimize extraneous load, freeing cognitive resources for creative exploration and conceptual understanding. In KAVRA, the UX architecture is evaluated against its capacity to minimize extraneous load through intuitive navigation, clear visual hierarchy, and streamlined interaction flows.

2.1.3 Brand identity communication and personal branding

Brand identity communication refers to the processes through which individuals and organizations construct, express, and negotiate identity through visual, verbal, and interactive channels ([Khedher, 2014](#); [Peters, 1997](#)). In digital environments, brand identity has evolved beyond organizational origins to encompass individual level identity construction, as users articulate personal identities through digital

activities, creative outputs, and social interactions ([Mytsa, 2024](#); [Thadepalli & Choudhary, 2024](#)). [Peters \(1997\)](#) personal brand concept describes how individuals strategically project identity through consistent visual and communicative choices, while [Khedher \(2014\)](#) argues that personal brand identity is co-created through repeated acts of self-expression, social feedback, and meaning negotiation an active communicative process in which identity is continuously constructed and communicated through audience interaction ([Khedher, 2014](#); [Peters, 1997](#)).

In digital fashion contexts, brand identity communication is particularly salient because fashion design is intrinsically linked to aesthetic preference, self-expression, and visual identity formation ([Mytsa, 2024](#); [Papahristou & Zolota Tatsi, 2024](#)). When users create garments, customize visual elements, and share design outputs, they engage in acts of identity externalization rendering aesthetic preferences visible, evaluable, and communicable. This study argues that UX functions as a strategic interface through which personal brand meaning is constructed, expressed, and socially negotiated extending existing communication branding theory by demonstrating that digital platform interaction design constitutes an active dimension of brand identity construction.

2.1.4 Integrated conceptual framework: UX as a strategic communication interface

Drawing on these three theoretical domains, this study proposes an integrated conceptual framework positioning UX as a strategic communication interface operating simultaneously across three functional dimensions: as a learning infrastructure, as an interactive communication system, and as a medium for identity construction and brand communication. The framework comprises three interdependent layers. The foundational layer encompasses HCI principles affordance design, usability, visual hierarchy, and feedback mechanisms ([Norman, 2016](#)). The intermediary layer applies cognitive load theory [Sweller \(2023\)](#) and instructional media principles [Miya & Govender \(2022\)](#) and [Panda \(2024\)](#), providing the pedagogical mechanisms through which UX supports learning. The expressive layer draws on communication branding, framing the higher order outcomes through which users articulate identities and communicate visual meaning to social audiences' theory ([Foroudi et al., 2018](#); [Khedher, 2014](#); [Peters, 1997](#)). The integrative contribution of this framework lies in reconceptualizing UX as a mediating layer connecting all three domains simultaneously effective UX design enables learning by reducing cognitive barriers, facilitates interaction through communicative affordances, and supports brand identity construction through expressive, customizable, and socially connective features. This framework provides the theoretical foundation for KAVRA's design, development, and evaluation, and guides empirical interpretation throughout the study.

2.2 Research design

This study employs a design thinking methodology to develop and evaluate KAVRA as a UX-based digital fashion learning platform. The selection of this framework was informed by a comparative assessment of established UX and instructional design approaches, each presenting distinct strengths and limitations relative to the study's research objectives. The ADDIE model (Analysis, Design, Development, Implementation, Evaluation) is a foundational instructional design framework valued for its structured, phase-based process and explicit focus on learning objectives ([Branch, 2009](#); [Molenda, 2003](#)). However, its primarily linear and instructor-centered orientation is less appropriate for research foregrounding iterative user engagement and continuous empirical refinement. ADDIE's sequential logic constrains the responsive, exploratory development necessary when designing for novice users with diverse interaction patterns. Agile UX development offers considerable flexibility through sprint-based cycles and continuous user feedback integration ([Gothelf & Seiden, 2021](#); [Sy, 2007](#)).

While well suited to commercial software development, its emphasis on rapid feature delivery over deep user-centered inquiry limits its suitability for academic research requiring systematic data collection, analytical rigor, and theoretically grounded documentation at each development phase. The ISO 9241-

210:2019 Human-Centred Design (HCD) framework provides internationally recognized principles for user-centered interactive system development (ISO 9241-210:2019). Although HCD shares principles with design thinking, it functions primarily as an evaluative standard rather than a generative research methodology, limiting its utility for the exploratory research questions pursued in this study.

Design thinking was selected based on four specific advantages. First, its empathy driven Empathize stage enables systematic qualitative investigation of user needs and latent challenges (Brown & Katz, 2019). Second, its iterative structure allows design decisions to be continuously refined by empirical user feedback. Third, it integrates user experience, pedagogy, and communicative design within a single methodological process suited to the intersection of HCI, instructional media, and communication branding. Fourth, design thinking has been validated as effective for educational technology development supporting both creative ideation and rigorous empirical evaluation. Two participant groups were involved: undergraduate fashion design students and fashion industry practitioners, selected through purposive sampling to ensure platform development was informed by both learning-oriented and professional perspectives. Ethical protocols were observed throughout, with all participants providing informed consent (Nielsen, 2016).

2.3 Research procedure

This study employed a design thinking approach to develop and evaluate KAVRA as a UX-based digital fashion learning platform. The method integrates user centered design, iterative development, and empirical evaluation through five phases: Empathize, Define, Ideate, Prototype, and Test (Brown & Katz, 2019). Participants included undergraduate fashion design students and industry practitioners, selected through purposive sampling to represent both user and expert perspectives.

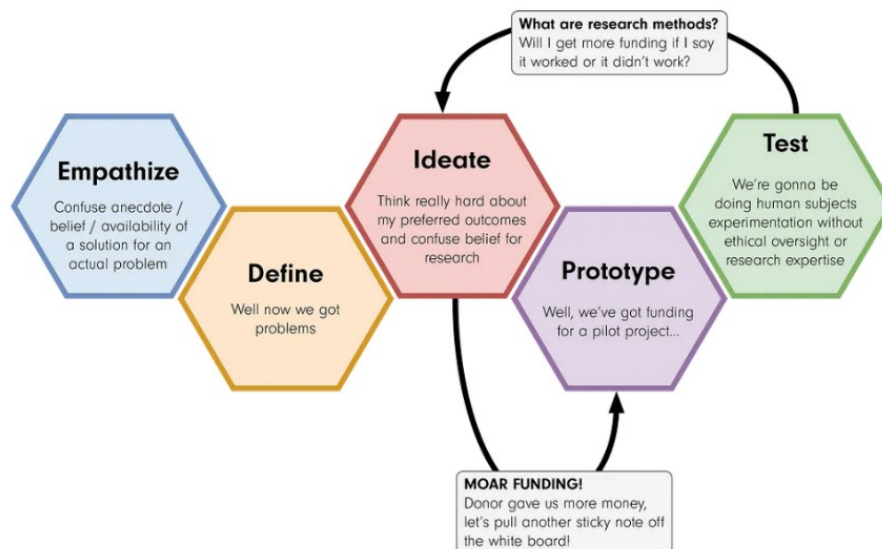


Figure 1. Design thinking workflow

2.3.1 Empathize

In the empathize stage, data were collected through semi structured interviews and observational sessions to understand user experiences, challenges, and expectations in digital fashion design. This qualitative approach enabled the identification of key usability and interaction issues that are often not captured through quantitative methods alone. The findings revealed three primary user needs, namely the need for simplified interaction, real time visual feedback, and communicative features that support collaboration. These findings are consistent with prior studies indicating that intuitive interfaces, immediate feedback, and collaborative affordances are critical for enhancing user engagement in digital systems.

2.3.2 Define

The define stage involved synthesizing insights from the empathize phase into structured problem formulations. User personas and user journey maps were developed to represent different user profiles and interaction pathways, enabling the identification of key pain points and opportunities for improvement. This analytical process is widely used in design thinking research to bridge user needs and system design by visualizing user interaction flows and contextual challenges. The core problem identified in this study was the lack of a digital platform that integrates accessible UX design, 3D visualization, collaboration, and identity expression within fashion learning environments. The integration of these elements is supported by previous research showing that technologies such as 3D visualization can enhance creativity and learning outcomes by enabling users to explore and evaluate designs interactively ([Lin & Ingaramo, 2024](#)).

2.3.3 Ideate

In the ideate stage, solution concepts were generated through brainstorming and feature mapping techniques. These methods are commonly used in design thinking to encourage the exploration of diverse ideas and to identify feasible design solutions. The process resulted in the identification of five core features of the KAVRA platform, namely Design, 3D Preview, Showcase, Chat, and Order. These features were conceptualized as an integrated workflow that supports the entire fashion design process, from idea generation to communication and product realization. The integration of collaborative and interactive features is consistent with findings from previous studies emphasizing the importance of social interaction and co-creation in digital learning environments.

2.3.4 Prototype

The prototype stage involved the development of a high-fidelity interactive prototype using iterative design processes, including wireframing and interface design. The prototype was designed to reflect user centered principles by emphasizing simplicity, visual clarity, and intuitive interaction. Design tools such as Figma were used to develop interactive elements that enhance user engagement and facilitate realistic interaction scenarios. The use of high-fidelity prototypes allows for more accurate evaluation of user experience, as it closely simulates real system interaction. Despite its advantages, previous research suggests that prototypes may not fully capture real world usage dynamics, highlighting the importance of iterative testing and refinement.

2.3.5 Test

The test stage focused on usability evaluation using task-based interaction scenarios and structured questionnaires. Usability testing is widely recognized as a critical component in system development, as it provides empirical evidence of system performance and user satisfaction. Participants were asked to complete representative tasks using the KAVRA prototype, followed by the completion of a usability questionnaire. This approach allows researchers to assess both task performance and user perceptions, providing a comprehensive evaluation of the system.

2.4 Data collection and analysis

The usability evaluation involved 42 participants: 28 undergraduate fashion design students and 14 fashion industry practitioners. Students provided insight into learnability and first-time interaction patterns, while practitioners offered professionally calibrated assessments of platform utility and design coherence, consistent with user centered principles advocating heterogeneous user representation ([Nielsen, 2016](#); [Tullis & Albert, 2013](#)). All participants completed structured task scenarios before responding to the questionnaire. Data were collected using a structured questionnaire adapted from two internationally

validated instruments: the System Usability Scale (SUS) (Brooke, 1996) and the User Experience Questionnaire (UEQ) (Laugwitz et al., 2008). The SUS provides a reliable ten item assessment of perceived system usability while the UEQ offers multidimensional coverage of pragmatic qualities (efficiency, perspicuity, dependability) and hedonic qualities (stimulation, novelty, attractiveness), making it well suited for creative platforms (Bangor et al., 2008; Schrepp et al., 2017). Items were contextually adapted across six dimensions: navigation ease, visual accessibility, time efficiency, information clarity, intuitive visual design, and overall user satisfaction.

The adaptation process followed three validation stages: item generation (expert review by the research team and three UX specialists); expert content validation (two independent HCI scholars and one communication design practitioner assessed each item using a four-point CVI scale, with items below 0.80 revised or excluded; and pilot testing ($n = 8$ to confirm item comprehensibility). The final instrument comprised 24 items across six dimensions (four per dimension), measured on a five-point Likert scale. Internal consistency was assessed via Cronbach's alpha ($\alpha = 0.89$), exceeding the $\alpha \geq 0.70$ threshold and meeting the $\alpha \geq 0.80$ standard for evaluation contexts (Cortina, 1993). Quantitative data were analysed descriptively for aggregate scores and via the Mann Whitney U test for between group comparisons the appropriate non parametric procedure for Likert scaled data with unequal group sizes. Qualitative interview data underwent thematic analysis following Braun & Clarke (2006) six phase procedure, consistent with HCI and UX research recommendations for mixed methods approaches (Creswell & Creswell, 2018; Panda, 2024).

3 Results

3.1 Usability evaluation of KAVRA platform

The usability evaluation of the KAVRA prototype demonstrates consistently positive performance across all assessed dimensions of user experience (UX). As summarized in Table 1, the platform achieved high scores in navigation ease (88%), visual accessibility (85%), time efficiency (90%), information clarity (82%), intuitive visual design (82%), and overall user satisfaction (82%). These results indicate that the system successfully meets core usability requirements for digital learning platforms.

Table 1. Usability evaluation results of KAVRA platform

UX Dimension	Score (%)	Category
Navigation ease	88%	Very good
Visual accessibility	85%	Very good
Time efficiency	90%	Excellent
Information clarity	82%	Good
Intuitive visual design	82%	Good
Overall user satisfaction	82%	Good

The highest score was recorded in time efficiency (90%), suggesting that users were able to complete design related tasks with minimal effort and time. This indicates that the platform's workflow and interaction structure effectively reduce procedural complexity, which is particularly important in systems designed for novice users. Navigation ease also received a high score (88%), reflecting the clarity of the platform's structural organization and user flow across core features, including Design, 3D Preview, Showcase, Chat, and Order. Visual accessibility (85%) indicates that the platform's typographic hierarchy, color contrast, and iconography effectively support user perception and comprehension. Meanwhile, information clarity (82%) suggests that instructional content and system feedback are sufficiently understandable, although minor improvements may be needed to enhance interpretability. Similarly, intuitive visual design (82%) reflects users' familiarity with the interface structure and interaction patterns, indicating alignment with common digital conventions. Overall user satisfaction (82%) confirms that users perceive the platform positively in terms of usability, functionality, and interaction experience.

This level of satisfaction indicates that the platform is not only operationally effective but also capable of delivering a meaningful user experience within a digital fashion learning context.

3.2 Comparative usability analysis: Students vs. Practitioners

A comparative analysis was conducted between the student (n = 28) and practitioner (n = 14) subgroups to examine whether user group characteristics systematically influenced platform perceptions, responding to HCI scholarship demonstrating that usability perceptions vary across expertise levels (Tullis & Albert, 2013). Table 2 presents mean percentage scores by group.

Table 2. Comparative usability scores by participant group

UX Dimension	Students (n=28)	Practitioners (n=14)	Overall (n=42)	Difference
Navigation ease	87%	90%	88%	+3%
Visual accessibility	84%	87%	85%	+3%
Time efficiency	92%	86%	90%	-6%
Information clarity	81%	84%	82%	+3%
Intuitive visual design	83%	80%	82%	-3%
Overall satisfaction	82%	82%	82%	0%

The data reveal a nuanced pattern of convergence and divergence. Both groups achieved identical overall satisfaction (82%), confirming consistent experience across expertise levels. The most pronounced divergence appears in time efficiency (students 92%, practitioners 86%, $\Delta = -6\%$), likely reflecting students' greater familiarity with mobile interaction paradigms against practitioners' more stringent professional standards. Practitioners scored higher on navigation ease (90% vs. 87%), visual accessibility (87% vs. 84%), and information clarity (84% vs. 81%), indicating that professionals recognized and valued KAVRA's deliberate visual organization. The slightly lower practitioner score on intuitive visual design (80% vs. 83%) may reflect expectations for granular controls available in professional software. Mann Whitney U testing indicated that the time efficiency difference approached but did not reach conventional significance ($U = 147.5$, $p = .067$), confirming overall usability perceptions were broadly comparable across groups.

3.3 Functional integration of KAVRA features

The results also indicate that the integration of KAVRA's core features Design, 3D Preview, Showcase, Chat, and Order successfully support a comprehensive digital fashion learning workflow. Users were able to move seamlessly between stages of design creation, visualization, communication, and potential product realization. Design feature enables users to create and modify fashion concepts through a simplified interface, reducing the technical barriers typically associated with professional design software. The 3D Preview feature allows users to visualize garments from multiple perspectives, supporting more accurate evaluation of design outcomes. The Showcase and Chat features facilitate communication and feedback exchange, while the Order feature connects creative output with potential real-world application. This functional integration demonstrates that KAVRA operates not merely as a design tool but as a structured learning environment that supports the full cycle of digital fashion creation and communication.

3.4 Interface and feature implementation of KAVRA

The following section presents a UX-grounded analysis of each KAVRA interface screen, foregrounding the design rationale underlying key decisions by connecting visual and interaction choices to their cognitive, communicative, and experiential functions. The analysis draws on affordance theory (Gibson

(2014) and Norman (2016), Gestalt perception principles, cognitive load theory (Sweller, 2023), the direct manipulation paradigm usability heuristics (Shneiderman, 1983), and dual quality UX model (Hassenzahl, 2010).

3.4.1 Home interface

The home interface applies the Gestalt principle of figure ground segregation to establish immediate visual hierarchy: the hero section directs attentional resources toward the platform's core value proposition before users encounter navigational complexity, reducing initial extraneous cognitive load (Sweller, 2023). The consistent blue scheme constitutes a visual affordance of system coherence (Norman, 2016) and communicates brand professionalism (Foroudi et al., 2018). Call to action buttons function as explicit action affordances positioned along the F pattern reading trajectory (Nielsen, 2016; Norman, 2016). The feature icon grid applies Gestalt similarity, and the bottom navigation bar applies Fitts' Law (Fitts, 1954), providing large, consistent touch targets minimizing mobile motor effort. The main content area features a prominent hero section displaying fashion product imagery, functioning as a visual highlight to capture user attention and establish the platform's core focus.

Two primary calls to action buttons "Start Designing" and "Order Your Creation" are strategically positioned below the hero section. These elements are designed to encourage early user engagement by providing clear pathways for both creative exploration and transactional interaction. The interface further integrates a feature section consisting of four core functionalities Design, 3D, Order, and Chat presented as icons to enhance accessibility and intuitive understanding. Additionally, a showcase section presents sample products as visual inspiration, complemented by a "See All" option that allows users to explore the full catalogue. The bottom navigation bar ensures seamless movement across main sections of the application, contributing to overall usability and interaction efficiency.

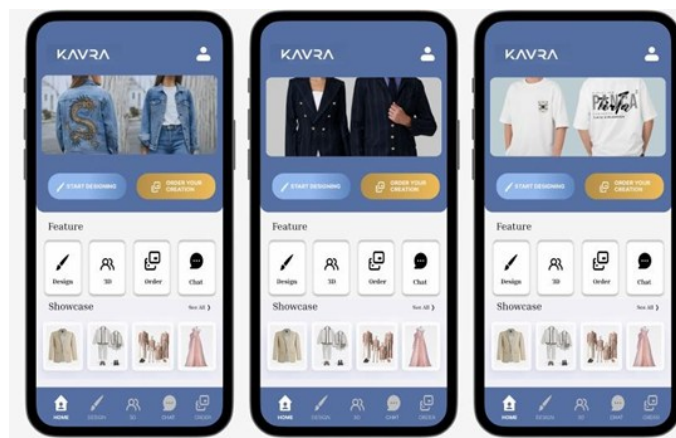


Figure 2. Home Interface

3.4.2 Profile interface

The profile interface foregrounds hedonic quality: the circular profile image constitutes an identity affordance activating reflective cognitive level (Hassenzahl, 2010; Norman, 2016). Card-based layouts apply Gestalt proximity to group semantically related content, while icon label pairings apply similarity. The Edit button constitutes a direct manipulation affordance fulfilling user control heuristic (Shneiderman, 1983). The profile interface is designed to represent user identity while providing access to previously created design outputs. As shown in Figure 3, the layout adopts a clean and structured visual approach, with a blue header that reinforces brand identity and establishes a clear visual hierarchy. A circular profile image is centrally positioned to emphasize personal identity representation. User information, including name, contact details, and address, is displayed within card-based layouts, enhancing readability and visual organization. The use of icons and consistent typography further improves information clarity.

An “Edit” button is positioned below the user information, allowing users to update their data easily. In the high-fidelity prototype, this element reflects realistic interaction states, supporting usability testing and interaction validation. The “Your Design” section presents user generated fashion designs in horizontally scrollable cards, each displaying visual previews. This feature establishes a direct connection between user identity and creative output, enabling users to revisit and manage their design portfolios efficiently.

3.4.3 Showcase interface

The showcase interface applies Gestalt similarity and proximity through its uniform card grid, satisfying aesthetic and minimalist design heuristic. The category filter system functions as an information scent affordance reducing extraneous cognitive load (Nielsen, 2016; Pirolli & Card, 1999; Sweller, 2023). Vertical scrolling applies mental model alignment, and the persistent navigation bar satisfies the consistency and standards heuristic (Nielsen, 2016). As illustrated in Figure 4, the layout adopts a structured grid system that allows users to browse and compare multiple design options efficiently. A category filtering system is positioned below the header, enabling users to refine product views based on categories such as Dress, Jacket, Custom, and Hoodie. This filtering mechanism enhances navigation efficiency by reducing information overload.

Product items are presented in card-based layouts containing images and labels, facilitating quick visual scanning and comparison. The grid arrangement ensures consistency and spatial organization, even when displaying large volumes of content. Vertical scrolling functionality allows users to explore the entire catalogue seamlessly, replicating familiar browsing patterns commonly found in e-commerce applications. The integration of a persistent bottom navigation bar ensures continuity of navigation across the platform. Overall, the showcase interface is designed to support intuitive product exploration while maintaining visual engagement and accessibility.



Figure 4. Showcase Interface

3.4.4 Design Interface

As the most cognitively demanding screen, the design interface applies direct manipulation through a central canvas providing continuous real time representation, fulfilling visibility of system status heuristic (Nielsen, 2016; Shneiderman, 1983). The icon-based toolbar applies perceived affordance, minimizing germane cognitive load for tool acquisition. As shown in Figure 5, the interface prioritizes a central canvas that serves as the primary workspace, allowing users to view design outputs in real time. Editing tools, including select, draw, erase, text, and effects, are presented as icon-based controls to enhance accessibility and usability. These tools allow users to manipulate design elements, adjust positioning, and apply visual modifications with precision. Additional features such as undo and redo functions further support interaction flexibility (Norman, 2016).

A dedicated panel provides access to assets and design settings, including motifs, layers, size adjustments, and opacity controls. This functionality enables users to manage complex design elements while maintaining a structured workflow. The interface also supports saving, deleting, and transitioning to 3D preview mode, reinforcing the integration between design creation and visualization.



Figure 5. Design interface

3.4.5 3D Visualization interface

The 3D visualization interface addresses the gap between designer's mental image and ability to evaluate spatial properties from 2D representation. Real time rotational manipulation provides a kinesthetics affordance reducing intrinsic cognitive load (Gibson, 2014). More significantly, the feature activates Norman (2016) reflective cognitive level, transforming the 3D interface from a visualization utility into a reflective design tool supporting the transition from creative intention to communicable identity. As illustrated in Figure 6, the interface incorporates interactive controls that allow users to rotate and examine designs in real time. This feature enhances design evaluation by allowing users to assess spatial composition, graphic placement, and structural details. The integration of realistic visualization and intuitive controls reduces the gap between conceptual design and expected physical outcomes. By providing a more immersive representation of fashion products, the 3D interface contributes to improved decision making and user confidence during the design process.

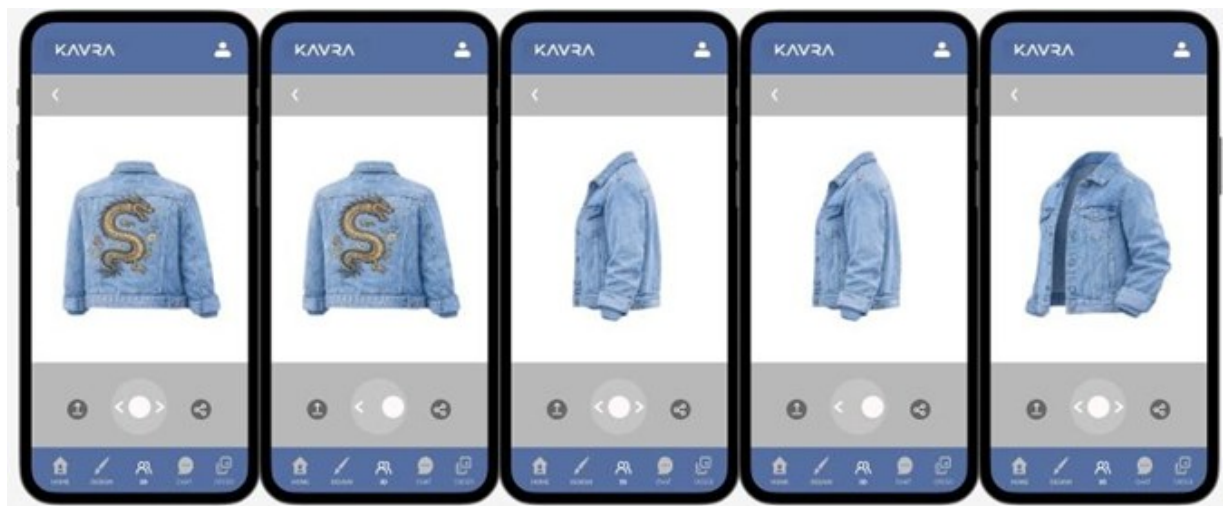


Figure 6. 3D Visualization Interface

3.4.6 Chat interface (overview)

The chat interface serves as a communication channel between users and other stakeholders, such as designers or production partners. As shown in Figure 7, the interface adopts a familiar messaging layout to minimize learning effort and support immediate usability. The header includes the application logo, user profile, and a search function, enabling users to locate conversations efficiently. The main content area displays a list of conversations, including contact names, message previews, timestamps, and online status indicators. This structure allows users to quickly identify relevant interactions and prioritize communication tasks. The use of familiar interface conventions enhances usability and reduces cognitive load.

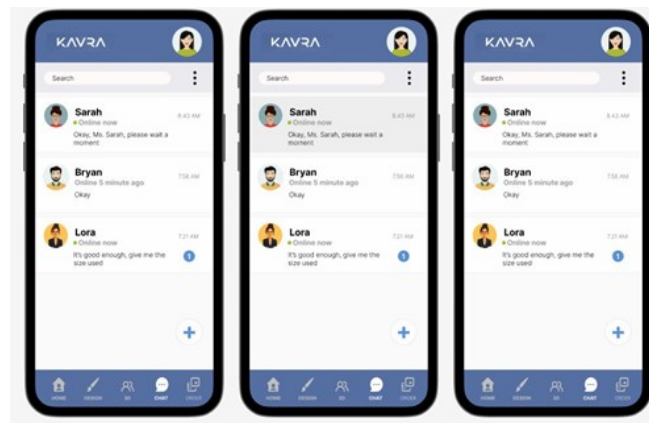


Figure 7. Chat Interface (Overview)

3.4.7 Chat detail interface

The chat detail interface integrates visual design content within the conversation stream. Positional and chromatic message bubble differentiation applies the Gestalt principle of figure-ground contrast. Embedded design previews with inline action buttons constitute contextual action affordances, eliminating task-switching costs and supporting direct manipulation continuity (Shneiderman, 1983). As illustrated in Figure 8, the interface organizes messages in vertically aligned chat bubbles, differentiated by position and colour to distinguish between participants. The integration of visual design previews within the chat enhances communication clarity, allowing users to discuss specific design elements directly within the conversation. Interactive buttons such as “Create” and “Order” are embedded within these previews, enabling users to take immediate action without navigating away from the conversation. The message input field is positioned at the bottom of the screen, designed for ease of use in mobile contexts. The overall layout supports efficient communication, decision making, and workflow continuity.

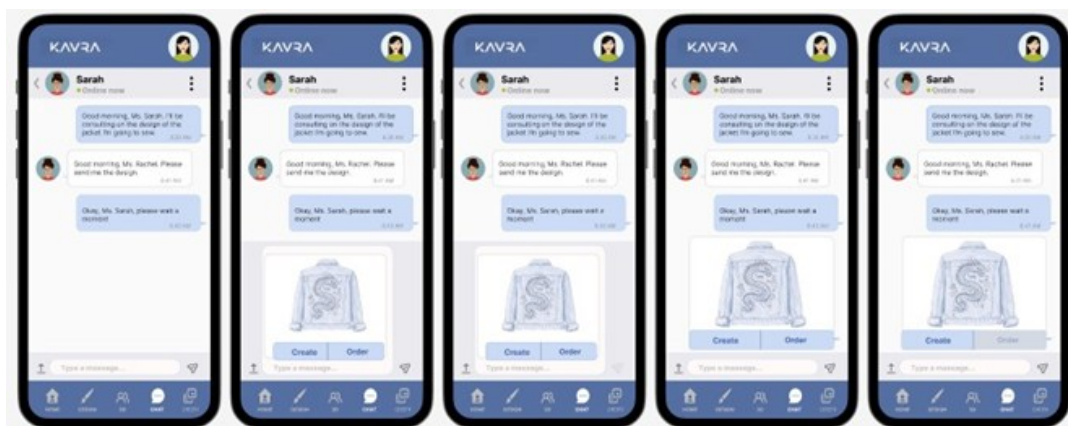


Figure 8. Chat detail interface

3.4.8 Order interface

The order interface applies linear progressive disclosure sequential steps reduce extraneous cognitive load (Sweller, 2023), through cognitive chunking (Miller, 1956). Multiple payment options fulfil flexibility and efficiency of use heuristic (Nielsen, 2016). As shown in Figure 9, the interface provides a structured overview of the ordering process. Product details are presented in card format, including item visuals, specifications, quantity, and pricing information. This layout enables users to review their selections before proceeding to checkout. Shipping information is displayed clearly to ensure accuracy in delivery. Users are provided with multiple payment options, including bank transfer and e-wallet systems, reflecting real-world transaction scenarios. Upon completing the checkout process, the system provides feedback through status indicators such as “Pending Confirmation” and order tracking stages (Processing, Packed, Delivered). A confirmation screen with visual indicators is presented upon successful transaction completion, enhancing user confidence and providing closure to the interaction process.

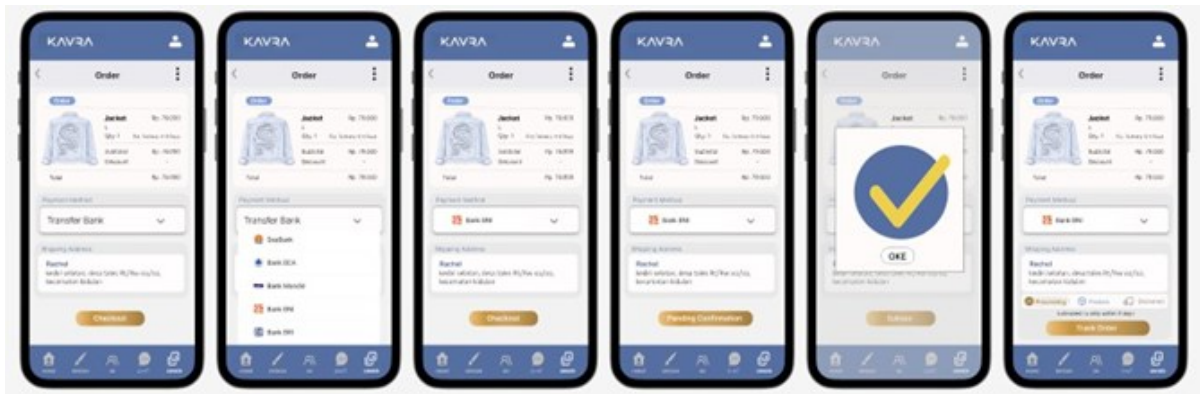


Figure 9. Order Interface

4 Discussion

4.1 UX as a digital learning infrastructure in fashion education

Evidence from the usability evaluation demonstrates that KAVRA's UX architecture functions effectively as a digital learning infrastructure for fashion design. High scores in navigation ease and time efficiency indicate that the platform successfully reduces cognitive barriers and supports user engagement in the learning process, aligning with computer-based instructional media research identifying usability, navigational clarity, and interface efficiency as fundamental determinants of effective digital learning (Miya & Govender, 2022; Panda, 2024).

From a pedagogical perspective, the UX design of KAVRA operates as a form of implicit instructional scaffolding. Rather than relying solely on explicit instructional content, the platform embeds learning pathways within its interface structure, allowing users to intuitively understand the sequence of fashion design activities. This supports the argument that digital learning platforms should not merely deliver content but should also guide user interaction through meaningful design structures. The integration of features such as Design, 3D Preview, and Showcase enables users to move fluidly between conceptualization, visualization, and evaluation stages, reflecting the iterative nature of fashion design learning.

Furthermore, the high time efficiency score suggests that the platform minimizes extraneous cognitive load, enabling users to allocate more cognitive resources to creative exploration and problem-solving. This finding is consistent with cognitive load theory, which posits that reducing unnecessary task complexity enhances learning outcomes and creative performance (Sweller, 2023). In the context of fashion education, where users must simultaneously engage with visual, technical, and conceptual elements, reducing interaction complexity is essential for supporting meaningful learning experiences.

Post-test interview data further corroborate this pedagogical interpretation. Participants consistently described the platform's navigation as cognitively undemanding, with the sequenced workflow guiding their actions without requiring deliberate orientation. As one student reflected:

"I did not need to think too hard about where to go next the platform just guided me step by step from designing to previewing to sharing. It felt very natural."

This account aligns with CLT's prediction that well-structured interfaces reduce extraneous processing demands, freeing cognitive resources for deeper creative engagement. Practitioner participants additionally noted that the platform's sequential feature structure mirrors authentic professional fashion production workflows confirming its relevance as both a pedagogical tool and a simulation of industry grounded practice (Sweller, 2023).

4.2 UX as a communicative interface for interaction and engagement

Beyond its pedagogical role, the UX design of KAVRA also functions as a communicative interface that facilitates user interaction and engagement. The high scores in visual accessibility and intuitive visual design indicate that the platform effectively establishes a communicative relationship between the user and the system. This supports the perspective that digital interfaces are not neutral tools but active mediators of communication, shaping how users interpret, navigate, and respond to information.

Visual accessibility plays a critical role in enabling effective communication within digital environments. As demonstrated by the findings, the use of clear typographic hierarchies, appropriate colour contrasts, and consistent iconography allows users to interpret interface elements with minimal effort. This aligns with Forouidi et al. (2018), who argue that visual design in digital platforms serves as a primary channel of communication, influencing user perception, trust, and engagement. In KAVRA, visual clarity ensures that users can focus on design tasks without being hindered by perceptual or interpretive difficulties. Similarly, intuitive visual design reflects the platform's alignment with users' mental models and prior digital experiences. The findings suggest that users can interact with the system without requiring extensive instruction, indicating that the platform successfully communicates its functional logic through visual and interaction cues. This is particularly important for novice users, who may lack familiarity with professional design software. By leveraging familiar design conventions, KAVRA reduces the learning curve and enhances user confidence.

Iterative incorporation of user feedback through design thinking substantially contributed to these communicative qualities (Fitra & Santoso, 2025; Putra & Kristiana, 2025). By ensuring that user needs and interaction preferences were continuously integrated into development, the methodology produced an interface whose communicative properties align closely with target user expectations. Qualitative evidence enriches this interpretation. Practitioners recognized the Chat and Order features as simulating authentic design consultation and production communication workflows absent from most academic platforms. One practitioner noted:

"The chat reminded me of how I actually work with clients we discuss a reference; they share a detail, I revise. That back-and-forth is completely missing from most fashion design software, and here it is built into the learning process itself."

This observation confirms that KAVRA's communicative interface extends beyond conventional usability to simulate the social and professional dynamics of fashion design practice, enhancing the platform's authenticity and perceived relevance for both learning and professional audiences. These findings reinforce the importance of user-centered design approaches in digital platform development. Previous studies have shown that incorporating user feedback through iterative design processes significantly improves usability

and user satisfaction. The design thinking methodology employed in this study supports this approach by ensuring that user needs and experiences are continuously integrated into the development process.

4.3 UX as a medium for identity expression and brand identity communication

A key contribution of this study lies in its reconceptualization of UX as a medium for identity expression and brand identity communication. While usability metrics provide evidence of functional effectiveness, their broader significance emerges when interpreted in relation to users' ability to express and communicate their identity through the platform. The findings indicate that KAVRA enables users to translate their aesthetic preferences into visual outputs, thereby supporting the process of identity externalization. This process is central to personal branding, as identity is constructed through repeated acts of expression and representation ([Khedher, 2014](#)).

The Design feature allows users to experiment with colours, forms, and styles, enabling them to articulate their personal aesthetic in a tangible form. The 3D Preview feature further enhances this process by allowing users to visualize their designs in a realistic context. This supports reflective design thinking, as users can evaluate their creations from multiple perspectives and consider how they may be perceived by others. Research on digital fashion technologies suggests that 3D visualization plays a critical role in enhancing creativity and supporting design evaluation ([Papahristou & Zolota Tatsi, 2024](#)).

In this study, the integration of 3D visualization contributes not only to technical understanding but also to the communicative dimension of design. The communicative potential of the platform is further extended through the Showcase and Chat features, which facilitate interaction between users and their audiences. These features enable users to share their designs, receive feedback, and engage in collaborative dialogue, thereby supporting the social construction of identity. This aligns with communication branding theory, which emphasizes that brand identity is co-created through interaction and communication rather than being solely defined by organizations ([Khedher, 2014](#); [Peters, 1997](#)).

In this context, UX operates as a strategic communication interface that mediates the relationship between individual identity and brand identity construction. The platform provides a space in which users can not only create designs but also communicate their identity and engage with others in the process of meaning making. This perspective extends existing research by highlighting the role of UX in facilitating identity formation within digital environments. Qualitative accounts provide compelling support for this reconceptualization. Students explicitly articulated the process of identity externalization in describing their Showcase interactions:

"When I finished my design and put it in the Showcase, I felt like I was showing people who I am as a designer my colour choices, the patterns I used, the style of the garment. It was more personal than I expected from a learning app."

Such accounts confirm that KAVRA successfully mediates between creative intention and communicative expression the fundamental dynamic of personal brand identity construction ([Khedher, 2014](#)). Usability scores are thereby revealed as indicators of a profound experiential process in which users simultaneously learn fashion design, develop creative voice, and construct a communicable personal brand identity through UX driven interaction.

4.4 Interdisciplinary contribution and conceptual implications

Collectively, the findings advance an interdisciplinary understanding of UX by bridging computer-based instructional media, HCI, and communication branding. By demonstrating that UX simultaneously functions as a technical system and a communicative environment, this study challenges conventional disciplinary divisions between usability research and communication theory. The findings of this study

contribute to an interdisciplinary understanding of UX, bridging the domains of computer based instructional media, human computer interaction (HCI), and communication branding. By demonstrating that UX can function as both a technical system and a communicative environment, this study challenges conventional distinctions between usability and communication. Within the domain of instructional media, the study highlights the importance of integrating usability, interactivity, and expressive functionality in digital learning platforms. Effective learning systems must support not only cognitive processes but also affective and communicative dimensions, enabling users to engage with content in meaningful ways. The KAVRA platform exemplifies this integration by combining learning, interaction, and identity expression within a single system.

In the field of HCI, the study advances the understanding of UX by emphasizing its communicative role. Traditional HCI research often focuses on efficiency, usability, and task performance. However, the findings of this study suggest that UX also plays a critical role in shaping user perception, engagement, and identity. This perspective encourages a broader approach to UX research that incorporates insights from communication theory and cultural studies. In communication branding, the study offers a novel perspective by shifting the focus of brand identity from organizations to users. The findings demonstrate that digital platforms can serve as mediators of personal branding, enabling users to construct and communicate their identity through interaction. This aligns with contemporary branding strategies that emphasize authenticity, participation, and user-generated content (Ahmed et al., 2026). By positioning users as active agents in brand identity construction, this study contributes to a more dynamic and participatory understanding of branding in digital contexts.

5 Limitations and future research directions

Several limitations of this study must be acknowledged with specificity. First, the use of purposive sampling with a limited sample ($n = 42$) constrains generalizability. While purposive sampling is theoretically justified for ensuring relevant user representation, it does not support statistical inference to broader populations. The sample reflects a specific institutional and cultural context Indonesian undergraduate fashion design education and findings may not transfer to users in different educational systems, cultural contexts, or professional environments. Future research should employ larger, more diverse samples incorporating probabilistic sampling approaches (Nielsen, 2016). Second, the between-group comparison of students ($n = 28$) and practitioners ($n = 14$) is limited by unequal and relatively small subgroup sizes. Although the Mann Whitney U test is appropriate for this data structure, statistical power to detect small to medium effects is limited at these sample sizes. Future research should plan for larger, more balanced subgroup compositions. Third, this study evaluates prototype usability at a single time point, without examining long term learning outcomes, behavioural change, or sustained platform impact on fashion design competency and identity formation. Longitudinal studies are needed to assess KAVRA's influence on skill development, creative confidence, and brand identity articulation over extended use. Despite these limitations, the study establishes a strong theoretical and empirical foundation for understanding UX in digital fashion learning and communication. Future research directions include longitudinal learning outcome investigations, cross cultural usability comparisons, and integration of artificial intelligence and extended reality for more adaptive and immersive digital fashion learning experiences.

6 Conclusion

This study demonstrates that KAVRA, as a UX based digital fashion learning platform, successfully integrates learning, interaction, and identity expression within a unified digital environment. Usability evaluation confirms that user experience design does not merely support task performance but plays a critical role in shaping how users engage with learning processes, interact with digital systems, and construct personal visual identities. High scores across navigation ease, time efficiency, visual accessibility, and overall satisfaction indicate that the platform effectively reduces cognitive barriers while enabling

meaningful engagement in fashion design activities. More significantly, the study reveals that UX functions as a strategic communication interface mediating the relationship between creative self-expression and brand identity construction. Through design creation, 3D visualization, and collaborative communication, users can externalize aesthetic preferences, engage in reflective evaluation, and communicate identity within social and digital contexts positioning users not only as learners but as active participants in the co-construction of brand meaning. This work advances knowledge across computer-based instructional media, HCI, and communication branding by proposing an integrated framework in which digital platforms operate simultaneously as learning infrastructures and communicative environments. Practically, designers of digital learning systems should prioritize expressive affordances, interaction clarity, and identity-oriented features to enhance user engagement and relevance. Future research should investigate longitudinal impacts on learning outcomes and identity formation and explore the integration of artificial intelligence and immersive environments to further advance digital fashion learning experiences.

Author's declaration

Author contribution

Sandra Alfiani: Conceptualization, methodology, writing, and drafting. **Dewi Istikhomah:** Visualization, data curation, and writing. **Muhammad Fadhil Shidqi:** Research and curation.

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Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request, subject to applicable ethical and confidentiality considerations.

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Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article. This research received no external funding from any commercial, governmental, or non-governmental organization. The KAVRA platform prototype was developed solely for academic research purposes and is not affiliated with any commercial product, service, or financial interest. No author has any personal, financial, or professional relationship that could inappropriately influence or bias the content of this manuscript.

Ethical clearance

This study was conducted with permission from the Undergraduate Program of Visual Communication Design, Universitas Dian Nuswantoro, and in accordance with the ethical principles of the Declaration of Helsinki. The usability evaluation involved 42 participants, consisting of 28 undergraduate fashion design

students and 14 fashion industry practitioners. Written informed consent was obtained from all participants prior to participation. All data were anonymized and kept confidential throughout the study.

AI statement

In the preparation of this manuscript, the authors utilized ChatGPT (OpenAI) to improve the coherence and cohesiveness of the writing for better readability, and Grammarly to check and correct grammatical structures throughout the article. Following the use of these AI tools, the authors manually rechecked the accuracy and correctness of all generated sentences in relation to the topic, data, and findings of this study to ensure that no AI generated content altered, misrepresented, or introduced bias into the original meaning. The data, analyses, and conclusions presented in this article remain solely the intellectual work of the authors. The language used in this manuscript has been validated and verified by a language center. The authors are fully responsible and accountable for the entire content of this article.

Publisher's and Journal's Note

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