Mini Review

Redefining design: current trends and the future of multidisciplinary practice

Abstract

This abstract delves into the evolving landscape of design education, spotlighting emerging courses such as Bio Design and Biomimicry, Fashion Future, and Spatial Textiles. It examines the intersection of creativity and technology, highlighting Mass Customization, Digital Transformation, and Human-Centered Design. The abstract explores the expanding horizons of design professions, from Healthcare Design to Experience Design, and envisions the integration of sustainability principles in Sustainable Design. From Print Media Design to Digital Film and Video Design, it navigates the realms of visual storytelling and innovation. With Industrial Design and Design Studies at its core, this abstract celebrates the diverse facets of design education and anticipates the future professions that will shape our world.

Keywords: emerging future of design area, AI in design tool & techniques

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Introduction

In today's rapidly evolving world, the landscape of design is continually expanding and diversifying, paving the way for innovative concepts and interdisciplinary collaborations. From Bio design and Biomimicry to Fashion Future, Textile Design to Spatial Textiles, and beyond, the upcoming design arena is a rich tapestry of creativity and forward-thinking solutions.[1] Bio design and Biomimicry represent a fusion of biology and design, harnessing nature's brilliance to inspire sustainable innovations. Fashion Future explores the intersection of style and sustainability, pushing the boundaries of eco-friendly materials and futuristic aesthetics. Textile Design and Spatial Textiles reimagine fabric and space, weaving together functionality and artistic expression.[2] Mass Customization heralds a new era of personalized products and experiences, while Future Professions anticipate the evolving needs of tomorrow's workforce. Healthcare design focuses on enhancing patient experiences and outcomes through empathetic and efficient design solutions. Print media design and Games design continue to captivate audiences with immersive storytelling and interactive experiences. Design Studies delve into the theoretical underpinnings of design practice, while Digital Film and Video Design shape narratives in the digital realm. Industrial design remains at the forefront of product innovation, blending form and function to meet the demands of modern life. Experience Design emphasizes the creation of memorable interactions and user journeys across various touchpoints. From Digital to Physical products, Visual design plays a pivotal role in communicating messages and shaping brand identities. Human-Centered Design places people at the heart of the design process, fostering inclusivity and accessibility. Digital Transformation drives organizations to adapt and innovate in an increasingly digital world, while Sustainable design champions environmentally conscious solutions for a greener future. In this dynamic landscape, designers serve as catalysts for change, driving progress through creativity, empathy, and a deep understanding of human needs and aspirations. As we embrace the challenges and opportunities of the future, the realm of design continues to inspire, empower, and shape the world we inhabit.

Basic application in future design aspects

Healthcare design

Healthcare design focuses on creating environments that promote healing, well-being, and efficiency within healthcare facilities. This area of design encompasses various aspects, including architectural layout, interior design, medical equipment design, and digital interfaces. Here are some basic applications within healthcare design:

a) Hospital layout and architecture: Designing hospitals with optimal layouts that prioritize patient comfort, accessibility, and efficiency. This involves considerations such as the arrangement of patient rooms, nursing stations, operating theaters, and support facilities.

b) Interior design and wayfinding: Creating interior spaces that are soothing, stress-reducing, and easy to navigate for patients, visitors, and staff. This includes the selection of colors, materials, lighting, and signage that contribute to a healing environment.

c) Medical equipment design: Developing medical equipment that is user-friendly, ergonomic, and aesthetically pleasing. This can range from designing intuitive interfaces for medical devices to creating comfortable and functional furniture for patient rooms.

d) Digital healthcare interfaces: Designing user interfaces for healthcare software applications, patient portals, and digital medical records systems. These interfaces should be intuitive, accessible, and secure to facilitate effective communication and information exchange among healthcare providers and patients.

e) Patient-centered design: Incorporating patient feedback and preferences into the design process to create environments and experiences that meet their needs and preferences.

Sustainable design

Sustainable design aims to minimize the environmental impact of products, buildings, and systems while promoting social responsibility and economic viability. It involves considering the entire lifecycle of a product or project and implementing strategies to reduce resource consumption, minimize waste, and promote renewable energy.[3,4] Here are some basic applications within sustainable design:

i. Energy-efficient buildings: Designing buildings that maximize natural light, ventilation, and insulation to reduce energy consumption for heating, cooling, and lighting. This may involve incorporating passive solar design principles, energy-efficient appliances, and renewable energy systems such as solar panels and wind turbines.

ii. Recyclable materials: Selecting materials that are renewable, recyclable, or biodegradable to minimize waste and resource depletion. This includes using recycled materials, sustainable wood products, and low-emission finishes in construction and manufacturing processes.

iii. Water conservation: Implementing water-saving measures such as rainwater harvesting, greywater recycling, and efficient irrigation systems to reduce water consumption in buildings and landscapes.

iv. Lifecycle assessment: Conducting lifecycle assessments to evaluate the environmental impact of products and projects from raw material extraction to disposal. This helps identify opportunities for improvement and inform design decisions that minimize environmental harm.

Fashion future

Fashion future explores innovative approaches to design, production, and consumption within the fashion industry, with an emphasis on sustainability, technology, and social responsibility.[5,6] Here are some basic applications within fashion future:

a) Sustainable materials: Experimenting with eco-friendly materials such as organic cotton, recycled polyester, and biodegradable textiles to reduce the environmental impact of fashion production.

b) Circular design: Embracing circular design principles such as upcycling, recycling, and garment leasing to extend the lifespan of clothing and minimize waste. This may involve designing modular or multi-functional garments that can be easily repaired, repurposed, or recycled.

c) Digital fashion: Exploring digital fashion technologies such as virtual prototyping, 3D printing, and augmented reality to create innovative designs and immersive shopping experiences. This allows designers to minimize physical waste and reduce the carbon footprint of fashion production.

d) Ethical supply chains: Promoting transparency and ethical practices throughout the fashion supply chain, from sourcing raw materials to manufacturing and distribution (Figure 1).

In summary, Healthcare design focuses on creating healing environments within healthcare facilities, Sustainable design aims to minimize environmental impact while promoting social responsibility, and Fashion future explores innovative approaches to design, production, and consumption within the fashion industry.[1,7,8] Each of these design areas presents opportunities for creativity, innovation, and positive social change.

Figure 1 (a) Healthcare design (b) Sustainable design (c) Fashion future

Textile design

Textile design involves creating designs for woven, knitted, printed, or embroidered fabrics. Basic applications in textile design include:

i. Pattern design software: These applications allow designers to create intricate patterns and motifs digitally. They offer tools for manipulating shapes, colors, and textures to create unique designs for fabrics.[9]

ii. Color matching tools: These tools help designers select and match colors accurately for textile designs. They often include color libraries and palettes to assist in color selection.

iii. Weaving and knitting software: For textile designers working with woven or knitted fabrics, specialized software enables them to create and visualize complex weave structures or knitting patterns.

iv. CAD software: Computer-aided design (CAD) software is used to create detailed technical drawings of textile designs. It allows designers to specify dimensions, seam allowances, and other details necessary for manufacturing.

v. Digital printing software: Textile designers often use software tailored for digital printing processes. These applications facilitate the seamless transfer of digital designs onto fabrics, ensuring accurate color reproduction and alignment.

Industrial design

Industrial design involves designing products and systems that are aesthetically pleasing, functional, and manufacturable. Basic applications in industrial design include:

a) 3D modeling software: Industrial designers use 3D modeling software to create virtual prototypes of products. These tools enable them to visualize designs from different angles and perspectives, make modifications, and assess ergonomics and aesthetics.

b) Prototyping tools: Prototyping software and hardware allow industrial designers to create physical prototypes of their designs. This may include 3D printing, CNC machining, or other rapid prototyping techniques.[10,11]

c) CAD/CAM software: Computer-aided design and manufacturing (CAD/CAM) software streamline the product development process by integrating design and manufacturing capabilities. These tools help industrial designers optimize designs for production and generate toolpaths for machining processes.

d) Rendering software: Rendering software is used to create photorealistic images and animations of product designs. This is essential for visualizing how the final product will look in different environments and lighting conditions.

e) Product Lifecycle Management (PLM) software: PLM software helps industrial designers manage the entire lifecycle of a product, from concept to end-of-life. It facilitates collaboration, version control, and documentation throughout the design and manufacturing process.

Human-Centered design

Human-centered design focuses on creating products, services, and systems that are intuitive, accessible, and responsive to user needs. Basic applications in human-centered design include:

i. User research tools: These tools enable designers to gather insights about user behaviors, preferences, and pain points through methods such as interviews, surveys, and observation.[12]

ii. Prototyping and testing platforms: Human-centered designers rely on rapid prototyping tools to quickly iterate and test design ideas with users. These platforms may include mockup tools, interactive prototypes, and usability testing software.

iii. Experience mapping software: Experience mapping software helps designers visualize and analyze the end-to-end user experience across various touchpoints. It allows them to identify opportunities for improvement and design interventions that better meet user needs.[13]

iv. Accessibility tools: Designing for inclusivity is a key aspect of human-centered design. Accessibility tools assist designers in evaluating and ensuring that products are usable by people with diverse abilities and needs.[14]

v. Collaboration software: Collaboration platforms facilitate communication and collaboration among multidisciplinary teams involved in the design process. These tools promote transparency, knowledge sharing, and alignment around user-centric design goals.

These basic applications serve as essential tools for designers across the disciplines of textile design, industrial design, and human-centered design, enabling them to bring their creative visions to life while meeting the needs and expectations of end users (Figure 2) (Table 1).

Figure 2 (a) Textile design (b) Industrial design (c) Human-Centered Design

Table 1 Emerging future of design area

S. No.	Future area of design	Particulars
1	Fashion future	Sustainable, inclusive, tech-integrated, minimalism, gender-neutral, versatile, expressive, ethical, innovative, timeless.
2	Textile design	Colourful, textured, innovative, sustainable, patterned, versatile, tactile, contemporary, expressive, eco-friendly.
3	Spatial textiles design	Exploring textiles' role in shaping spatial experiences, blending art, design, and functionality for dynamic interior and architectural environments.
4	Mass customization	Tailoring products/services to individual needs at scale, enhancing customer experience, optimizing production efficiency, and fostering consumer engagement and loyalty.
5	Future professions	In the future, professions like virtual reality architect, AI ethicist, nanomedicine engineer, and space tourism guide will become increasingly prevalent.
6	Healthcare design	Healthcare design integrates functionality, aesthetics, and accessibility for optimal patient care, promoting healing environments through innovative architecture and thoughtful planning.
7	Games design	Games design involves ideation, mechanics, and narrative crafting to create immersive experiences, blending art, technology, and player interaction seamlessly.
8	Print media design	Design captivating print media, utilizing layout, typography, and imagery for engaging visuals that communicate effectively and leave a lasting impression.
9	Bio design and biomimicry	Bio design and biomimicry leverage nature's principles for innovative solutions, merging biology and technology for sustainable design and problem-solving.
10	Design studies	Design studies explore creative problem-solving, aesthetics, user experience, and functionality across disciplines, shaping products, spaces, and experiences for diverse needs.
11	Digital film and video design	Digital film and video design combines artistic vision with technical expertise to create immersive storytelling experiences through visual media production.
12	Industrial design	Industrial design integrates aesthetics and functionality to create products that enhance user experience, efficiency, and market competitiveness through thoughtful innovation.
13	Experience design	Experience design integrates user needs, business goals, and technology to craft seamless interactions, fostering engagement, satisfaction, and meaningful connections.
14	Design digital products	Design digital products with user-centric approach, emphasizing usability, aesthetics, and functionality for seamless user experiences across diverse platforms and devices.

Table 1 Continued...

S. No.	Future area of design	Particulars
15	Design physical products	Designing physical products requires creativity, functionality, and user-centricity, balancing aesthetics with practicality to create innovative and desirable solutions for consumers.
16	Human-Centered Design for AI and Robotics	Human-Centered Design for AI and Robotics prioritizes user needs, emotions, and experiences to create technology that enhances human lives seamlessly.
17	Digital transformation	Digital transformation revolutionizes businesses, leveraging technology to optimize processes, enhance customer experiences, and drive innovation for sustainable growth and competitiveness.
18	Sustainable design	Sustainable design integrates eco-friendly practices, materials, and energy-efficient solutions to minimize environmental impact while enhancing human well-being and longevity.
19	Graphic Design	Graphic design combines art and technology to communicate ideas visually. It utilizes typography, imagery, and layout to convey messages effectively.
20	Interior Design	Interior design merges aesthetics with functionality, harmonizing spaces through color, texture, furniture, and lighting, creating personalized environments for occupants' comfort.
21	Designing for the Circular Economy	Designing for the Circular Economy involves creating products that prioritize durability, reuse, recycling, and minimizing waste, fostering sustainable consumption habits.
22	Designing for Virtual and Augmented Reality	Designing for Virtual and Augmented Reality requires seamless user interaction, immersive experiences, intuitive interfaces, and optimized performance for diverse environments. Top of Form
23	Design Entrepreneurship and Innovation	Design entrepreneurship and innovation merge creativity, business acumen, and technology to create impactful solutions, fostering growth, and driving societal progress.

Conclusion

In envisioning the future of fashion and design, it's imperative to recognize the transformative power across various realms. Textile design transcends mere aesthetics, intertwining with spatial design to shape immersive environments. Mass customization emerges as a hallmark, fostering individual expression within a collective narrative. As professions evolve, healthcare and bio design ascend, harnessing innovation for wellness and sustainability. Games, print media, and digital film converge into immersive narratives, while industrial and product design adapt to digital and physical realms. Human-centered design emerges as a cornerstone, guiding AI and robotics integration with empathy and ethics. Amidst digital transformation, sustainability emerges as a non-negotiable imperative, influencing every facet from graphic to interior design. Circular economy principles infuse creativity, while virtual and augmented reality redefine spatial experiences. Entrepreneurship becomes synonymous with innovation, driving a dynamic landscape of possibilities. In this synthesis, the future of fashion and design is not merely a canvas but a catalyst for societal, environmental, and technological evolution.

Conflicts of interest

The authors declare that there is no conflict of interest.

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