Textiles Environment Design (TED) (2019)

Textile Environment Design refers to the **practice of designing textiles and materials** that not only **meet functional and aesthetic needs** but also address environmental, ecological, and sustainability concerns. It focuses on the development, production, and application of textiles that align with sustainable practices while reducing the impact on the environment throughout their lifecycle.

Key Aspects of Textile Environment Design

1. **Sustainable Material Selection**:
   - Using renewable, biodegradable, or recycled materials like organic cotton, hemp, bamboo, or recycled polyester.
   - Minimizing the use of synthetic fibers that are non-biodegradable or resource-intensive to produce.
2. **Eco-friendly Production Processes**:
   - Reducing water, energy, and chemical consumption during textile production.
   - Adopting non-toxic dyes and treatments.
   - Implementing closed-loop systems to recycle waste and water.

3. **Lifecycle Analysis (LCA)**:

- Evaluating the environmental impact of a textile product from raw material extraction to end-of-life disposal.
- Designing for durability, reparability, and recyclability.

4. **Circular Economy Principles**:

- Designing textiles that can be disassembled and reused in new products.
- Promoting systems where materials flow in closed loops, avoiding waste and pollution.

5. **Smart and Functional Textiles**:

- Developing materials with specific environmental benefits, like air-purifying fabrics or textiles that regulate temperature, reducing energy consumption in buildings.

6. **Applications in Interior and Exterior Design**:

- Textiles for furniture, curtains, and carpets that enhance indoor air quality and reduce environmental impact.
- Outdoor textiles designed for durability and minimal maintenance without harmful coatings.

7. **Aesthetic and Cultural Integration**:

- Balancing sustainability with visual and tactile appeal.
- Preserving and promoting traditional eco-friendly textile techniques like hand weaving and natural dyeing.

Examples of Textile Environment Design

- **Green Building Textiles**: Fabrics designed to improve energy efficiency in homes and offices, such as thermal-insulating curtains.
- **Biodegradable Fashion**: Clothing made from materials that decompose naturally without releasing harmful substances.
- **Recycled Textile Innovations**: Fabrics created from ocean plastics or old garments to reduce waste.

Types of Textile Environment Design (TED)

Textile Environment Design can be categorized into various types based on the purpose, application, and the specific environmental goals it aims to achieve. Below are the primary types:

1. Sustainable Textile Design (2019)

Focuses on minimizing the environmental impact throughout the textile lifecycle, from raw material sourcing to disposal.

- **Examples**: Organic cotton, hemp, bamboo textiles, recycled polyester.

2. Eco-Friendly Textile Production Design

Targets environmentally safe manufacturing processes.

- **Key Elements**:
  - Low-energy and water-efficient production.
  - Non-toxic dyes and chemical treatments.
  - Closed-loop systems to manage waste and water.
  - Design to Reduce Energy and Water Use

3. Functional and Smart Environmental Textiles

Involves creating textiles with special features that address environmental challenges.

- **Examples**:
  - Air-purifying textiles (e.g., fabrics that neutralize pollutants).
  - Temperature-regulating materials that reduce energy consumption.
  - UV-resistant textiles for outdoor durability.

4. Circular Textile Design

Emphasizes a closed-loop system where materials can be recycled or reused.

- **Examples**:
  - Modular garments designed for disassembly.
  - Fabrics that can be remanufactured into new products.
  - Design for recycling / upcycling.
  - Design for mono materiality.

5. Biodegradable and Compostable Textile Design

Creates textiles that break down naturally without harming the environment.

- **Examples**:
  - Fabrics made from plant-based materials (e.g., jute, flax).
  - Bioplastics derived from renewable resources.

6. Green Building and Interior Textile Design

Focuses on textiles used in architecture and interiors to enhance sustainability.

- **Examples**:
  - Thermal-insulating curtains.
  - Sound-absorbing panels made from recycled fibers.

7. Industrial and Technical Textile Design

Develops materials for industries like automotive, healthcare, and agriculture, with an emphasis on sustainability.

- **Examples**:
  - Geotextiles for soil conservation.
  - Recyclable car upholstery.
  - Biodegradable medical textiles like sutures.

8. Regenerative Textile Design

Goes beyond sustainability to actively restore and improve the environment.

- **Examples**:
  - Fabrics that promote soil health after decomposition.
  - Algae-based textiles that capture carbon during production.

9. Energy-Efficient Textile Design

Focuses on reducing energy consumption during production and usage.

- **Examples**:
  - Low-energy dyeing processes.
  - Self-cleaning or anti-microbial textiles that reduce the need for frequent washing.

10. Zero-Waste Textile Design

Aims to eliminate textile waste by optimizing pattern layouts and promoting reuse.

- **Examples**:
  - Zero-waste fashion design techniques.
  - Upcycling scraps into new products.
  - Design for long-life and short-life applications
  - Zero waste cutting
  - Design with enhanced aesthetic value

11. Recycled Textile Design

Uses post-consumer and post-industrial waste to create new textiles.

- **Examples**:
  - Fabrics from recycled plastic bottles.
  - Textiles made from old garments or production waste.

Each type contributes uniquely to creating a balance between functionality, aesthetics, and environmental stewardship in **Textile Design**.

12. Design that Explores Clean / Better Technologies

Replacing systems of production with less energy-consuming and smarter technologies to reduce environmental impacts.

Examples:

- Bio-based materials and processes
- 3-D printing
- Laser
- Water-jet
- Sonic cutting
- Sonic welding
- Digital printing
- 'Re-surfacing' of polyester
- Novel dyeing techniques
- Digital finishing
- Tagging

13. Design that Looks at Models from Nature & History

This strategy is about how much textile designers can find inspiration and information for future sustainable design from studying and reflecting upon nature as well as textiles, habits and societies of the past.

Examples:

- Shape-memory polymers to mimic natural movement
- 'Lotus effect' nano-coatings
- Velcro
- Austerity repair
- Make-do-and-mend
- D.I.Y/ punk customization
- Modern nomads

14. Design to Reduce the Need to Consume

Design to Reduce the Need to Consume is a sustainable design philosophy focused on creating products that minimize the necessity for frequent replacement, excessive consumption, or overuse of resources.

In the context of textiles and fashion, this approach emphasizes longevity, versatility, and quality, ensuring that products last longer, serve multiple purposes, or require fewer resources to maintain.

Examples:

- Emotionally durable design
- Slow design
- Consumer participation in co-design and collaborative consumption, crowd sourcing and social networks
- Apps for bespoke information

15. Design to Dematerialise and Develop Systems & Services

This strategy introduces the concept of designing systems and services instead of, or to support, products, e.g. lease, share, and repair.

Examples:

- Lease
- Share
- Repair
- Experience design
- User-centred methods to design services
- Collaborative online/local communities
- Transition-towns

16. Design Activism

- In this final strategy, we encourage designers to leave behind the product and work creatively with the consumers and society. It is about designing events and communication strategies beyond product design to increase consumer and designer knowledge about the environmental and social impacts of fashion and textiles. Here, the textile designer becomes a 'Social Innovator.' We reflect on how much has changed for textile designers and how much potential for the future there is!
- New ways of thinking about how design can catalyse, nurture, enable and activate positive societal changes towards more sustainable ways of living and working

Examples:

- Publications
- Blogs
- Open-source networks
- Exhibitions
- Conferences
- Festivals
- Social media