Developing the Framework for Sustainable Fashion and Textile Design Education in India

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ABSTRACT

The fashion and textile industry has become a focal point in sustainability discussions due to the impact of human lifestyle and its footprint on the ecosystem. The United Nations' Sustainable Development Goal 12 (SDG12) emphasises the importance of responsible production and consumption and underscores the crucial role of the fashion and textiles industry. India's position in the fashion and textile sector is exceptional, with locally sourced materials, growth in consumption patterns because of its huge population and increasing buying capacity, decentralized textile crafts, strong artisanal skills, and a robust manufacturing infrastructure. This combination makes it essential to implement sustainable practices. This study aims to present a comprehensive framework for sustainable fashion design education in India, which is in line with international standards and best practices. The objective is to develop robust guidelines, to meet SDG 12. These guidelines are intended to help the fashion industry embrace sustainable practices by providing young professionals with the knowledge, skills and values required for SDGs. The expected outcome is a comprehensive framework for sustainable fashion education that integrates effective global and local practices, promoting a sustainable future for the entire ecosystem. The research employs a mixed-method approach to analyze the course curriculum content of Indian fashion and textile education institutions and their strategies for sustainability. Additionally, it conducts a comparative study of sustainable fashion education methods used internationally. Studying effective sustainable approaches helped create comprehensive sustainable fashion education guidelines. The study recommends that the fashion industry and education system may contribute to a more sustainable and socially responsible future by adopting these suggestions.

Keywords: Indian Sustainable Fashion Education, Sustainable Future, Fashion Education Framework, Sustainable Development Goals, Fashion and Textile Design Institutes, Design Curriculum, Responsible Production and Consumption.

INTRODUCTION

The inclusion of sustainability, ethical practices, and multidisciplinary collaboration in fashion and textile design education is emphasized in the UN SDG 30 and ESD criteria for SDG 12. By encouraging transformational learning, these frameworks empower students to support ethical production and consumption practices in the fashion sector. Academics must employ a multipronged approach that includes curriculum design, pedagogical innovation, and institutional commitment in order to successfully integrate SDG in education. Educational systems may empower students as active contributors to sustainable development by incorporating SDG concepts into all aspects of instruction and operations. This creates a generation of informed, accountable, and influential global citizens.

Designing the Future: A Sustainable Approach to Fashion and Textiles

Since design influences decisions at every stage of the product lifecycle, it is essential to reducing the carbon footprint of fashion and textile items. From selecting the fibers and threads to the last stages of branding, sales, and consumer behaviour, designers have influenced every stage of the process. Design plays a key role in lowering the carbon footprint of textile and fashion products since it affects operations at every stage of the product's lifecycle. Designers have the ability to use sustainable fibers, such as recycled fabrics or organic cotton, which reduce production-related water and energy usage (Fletcher, 2014). Prioritizing eco-friendly dyeing technologies and low-waste textile fabrication techniques can help reduce pollution and resource consumption (Gwilt, 2020). Sustainable branding influences branding and consumer involvement by promoting eco-friendly buying habits (Pookulangara & Shephard, 2013). One of the best examples of this is the fast fashion catastrophe. As demonstrated by the fast fashion concept, rapid manufacturing cycles and disposable apparel have led to environmental degradation and unnecessary waste (Cline, 2012). Designers may disrupt the quick fashion paradigm and promote a sustainable culture by encouraging durability in design and teaching consumers about ethical purchase (Black, 2012). Design is therefore a transformative instrument that may be used to promote systemic change.

India's long history of textile production, from the exquisite Banarasi silk handloom traditions to Mahatma Gandhi's enduring Khadi legacy, emphasizes the nation's crucial role in the global fashion and textile industry (Chishti & Lynton, 2014). India is becoming more and more significant in the modern world as its textile industry adopts innovative strategies to reduce its environmental impact. India is the world's largest producer of organic cotton, accounting for over half of global production, demonstrating its commitment to sustainable fiber procurement (Textile Exchange, 2021). Furthermore, Raymond and Arvind are investing in two eco-friendly technologies: closed-loop manufacturing and waterless dying (Bhaduri & Ha-Brookshire, 2015). The growth of small-scale sustainable businesses that employ natural dyes and traditional crafts is one sign of the discernible shift in producer and

customer attitudes toward ethical activities (Jain, 2020). Because of the way its traditions and modernity work together, India is emerging as a key player in the global movement for eco-friendly apparel.

Design experts and companies play a vital role in the advancement of artisans and workers by promoting moral behaviour and ensuring equitable compensation. Ethical design principles include the preservation of traditional crafts, the empowerment of artisans, and the emphasis on supply chain transparency (Scrase, 2003). According to Venkatesan (2015), fair wage regimes can support artisans like Dastkar and Fabindia in maintaining their customs and earning a living. Additionally, social firms in India are implementing direct-to-consumer techniques in order to provide artisans with a larger portion of the profits (Singh, 2017). These initiatives support cultural sustainability and the economy. By incorporating fair trade principles, India's long-standing handloom industry can be revitalized and an environmentally friendly fashion sector can be promoted (Dissanayake et al., 2017). Bhalla et al. (2018) state that the Khadi handloom fabric is an example of a sustainable fabric. It is well known for using few resources and having little impact on the environment. Beyond its environmental benefits, the Khadi industry offers a community-centred economic model that empowers rural artisans and fosters social inclusion through its decentralized structure. This approach aligns with sustainable development goals and enables scalable solutions for rural economic growth while protecting cultural assets. These initiatives demonstrate how the handloom industry has the potential to be a key component of sustainable fashion.

AIM AND THE APPROACH OF THE STUDY

The main objective of this study is to create thorough guidelines for teaching sustainable fashion design in India that are in line with best practices and international standards in order to promote internationally competitive educational models. The study analyzes institution course content using a qualitative method to identify the underlying topic. The curriculum of Indian fashion and textile design schools is critically examined using the content analysis approach, with an emphasis on how sustainability pedagogies, practices, and concepts are incorporated. This is complemented by a comparative analysis of sustainable fashion education methods used globally in the "Sustainable fashion and textile design undergraduate program". The study attempts to create a strong foundation for internationally competitive educational models by contrasting Indian practices with international methods. This two-pronged strategy guarantees that the study not only compares existing Indian curriculum but also offers practical suggestions to promote sustainability in fashion education, guaranteeing its applicability and quality in the global academic environment.

Objective of the study

1. Examine the fashion and textile curricula of India's top universities to comprehend the current elements of sustainable fashion and textiles.
2. Examine the course offerings of the top worldwide "Undergraduate Program in Sustainable Fashion and Textile Design" and comprehend the focus on sustainability.

Design a framework for enhancing the fashion and textile education course curriculum to instil the ideals of conscientious production and consumption in aspiring professionals.

LITERATURE REVIEW

Shaping Sustainable Minds: India's Blueprint for Eco-Conscious Higher Education

The Indian government is promoting sustainability in higher education by implementing proactive policies, and by curricular modifications that encourage interdisciplinary learning and environmental awareness. Environmental education must be a core component of undergraduate courses, under the University Grants Commission's (UGC) "Draft Guidelines and Curriculum Framework for Environment Education at Undergraduate Level." According to the Sustainable Development Goals (SDGs), particularly SDG 12 on responsible production and consumption, the framework emphasizes ecologically friendly ideas including resource management, climate resilience, and sustainable development (UGC, 2022a). Transformative reforms are brought about by the Curriculum and Credit Framework for Undergraduate Programs, which gives students the freedom to select interdisciplinary courses and promotes a deeper comprehension of sustainability (UGC, 2022b). Features like credit-based certifications, multiple entry and exit choices, and hybrid learning styles increase the flexibility and inclusivity of education. For example, by studying environmental studies in addition to their main subjects, design degree students can incorporate sustainable practices into their professional skills. The UGC also emphasizes practical applications, like project-based learning and community interaction, to bridge the gap between theory and real sustainability challenges. Additionally, initiatives like the National Education Policy (NEP) 2020 support sustainability through a multidisciplinary approach by encouraging the integration of green skills and fostering collaboration between academia and industry (Ministry of Education, 2020). Through initiatives like Unnat Bharat Abhiyan, which use sustainable development methods for local development, universities can strengthen their links with rural communities (UBA, 2014). By incorporating sustainability into higher education, these frameworks ensure that graduates are environmentally conscious professionals ready to promote sustainable innovation and development in a range of industries, including fashion and textiles. Schools like NIFT have adopted government-supported curricula that prioritize sustainability, the circular economy, and the

empowerment of craftsmen by fusing traditional knowledge with innovation (NIFT, 2022). These programs position design education as a long-term catalyst for India's thriving textile and clothing sector.

RESEARCH METHODOLOGY

Research methodology uses a strict content analysis framework to investigate how fashion and textile design programs are incorporating sustainability teaching into their curricula. Through the categorization and classification of website content, the study provides a thorough understanding of the methods that academies employ to include sustainability into their course curricula. Using content analysis and a qualitative research strategy, this study methodically examines and interprets how fashion and textile companies convey their sustainability policies and procedures. The goal of the study is to comprehend how important themes on sustainability principles are represented in various undergraduate programs by analysing textual and visual content from the official websites. In order to find patterns, codes, and themes in the data, the study uses both deductive and inductive methodologies for content analysis. The study framework is based on sustainable communication theory and thematic analysis. The study places a strong emphasis on instructional strategies and learning exercises meant to cultivate sustainability in aspiring professionals.

The researcher used an inductive technique to find new themes that surfaced from the data, while using a deductive approach to frame initial codes based on existing sustainability literature. In order to investigate how sustainability is portrayed, this study used a single-method research approach that solely focused on qualitative content analysis. The decision was taken in order to guarantee a thorough analysis of both textual and visual material free from the limitations of quantitative measurements.

The grounded theory approach offers numerous benefits for content analysis in academic research, particularly when developing a robust framework. As scientists develop theories inductively from facts, it allows researchers to find patterns, themes, and connections that emerge organically rather than being constrained by preexisting notions (Glaser & Strauss, 1967). When studying complex subjects with multiple points of view and interdisciplinary information, such as sustainability in fashion education, this method is highly effective. According to Charmaz (2014), researchers can iteratively improve their framework as new evidence becomes available because grounded theory ensures rigor and adaptability.

Time Horizon

Data for the research was gathered all at once between June 24 and September 2024, using a cross-sectional temporal frame. With this timeframe, the researcher was able to document the current condition of sustainable practices as they were displayed on websites at the time, without taking into account how they had changed over time.

Techniques and Procedures: The data collection from websites and published documents.

- **Sampling:** selection of leading fashion and textile design colleges websites.
- **Data extraction:** manual extraction of relevant text.
- **Data management:** The extracted content was categorised into spreadsheets and coding for analysis.

The coding procedure was methodical and involved classifying codes according to themes. Data management and coding processes, ensuring the robustness of the thematic analysis. There are no immediate ethical issues with participant confidentiality because the study is based on data from websites that are openly accessible. Nonetheless, the researcher is aware of the drawbacks of utilizing organizations' self-reported material.

Sampling Technique

The study uses purposive sampling, targeting websites of leading fashion and textile design programs that explicitly include training related to sustainable practices.

Research Phases: The research was conducted in the following phases
Phase 1:

Data collection took place between April to September 2024. Four Indian Undergraduate Programs were examined via their website, and pertinent textual and visual materials about sustainable practices were methodically examined. A large number of fashion and textile design schools can be found in India, which reflects the nation's strong focus on the creative sectors. There are more than 894 fashion design colleges in India, including both public and private establishments, according to Collegedunia (2023). NIFT Delhi and the National Institute of Design (NID) are two of the top government schools for fashion design education, while Pearl Academy and Amity School of Fashion Technology are two of the best private schools. These top universities were thoroughly examined using their publicly accessible websites, published papers, published course designs, and sustainability initiatives.

Internationally many "Sustainable fashion and textile design undergraduate programs" are there but this sample study is limited to four programs and the names of these undergraduate programs include sustainability in their program name. These courses were analysed through Similar content analysis methods as mentioned earlier, "Open Codes" were based on existing literature. The codes were grouped into larger categories for "Axial Code". Ultimately, "Selective Code" represented the principal theme of key elements.

- University of Leeds: Sustainable Fashion BA
- Bachelor of Sustainable Fashion Design (Whitcliffe, New Zealand)
- International Fashion Academy Paris: Bachelor's in Fashion Sustainability

- Bachelor of Fashion and Textiles (Sustainable Innovation) RMIT UNIVERSITY

Data Extraction: Text was manually taken from the chosen portions of websites, such as course structures, sustainability project documentation, and homepages.

Phase 2:
Coding and Categorization of the Data: The data were grouped into distinct sustainability-related themes, including field visits, eco-friendly materials, environmental responsibility, design innovation, pedagogy methods, and artisan engagement.

Open Coding: The first codes are based on the body of knowledge on sustainability that is available on the undergraduate fashion and textile program's numerous online platforms. The recurring ideas and sustainability training were gathered from the websites of the four top institutions and compiled into tables using Open Code. The codes included things like "ethical practice," "human-centred design," and "eco-friendly material." Table 1 lists all open codes at the conclusion.

Axial Coding: The codes were categorized into more general groups such Supply Chain Transparency, Eco-friendly Production, and Artisan Development. The Axial Code was grouped and further refined by referring to the program structures of leading institutes. Following that, these codes were categorized as axial: Multidisciplinary Solutions, Professional Ethics, Design for Society, Innovation for Sustainability.

Selective Coding: The last phase entailed determining the fundamental themes that encapsulate the way sustainability is presented across all brands. The main topic of Core Sustainable Practices, which encompassed all methods used by sustainable fashion businesses, was embodied by the final chosen coding.

RESULTS AND DISCUSSIONS
The undergraduate programs are leaders in fostering sustainability through innovative teaching practices and curriculum design. These institutions integrate eco-conscious principles into their pedagogy, preparing students to address environmental challenges while preserving cultural heritage and driving innovation in the fashion and textile industries. These overarching themes represent the broader categories under which Indian fashion and textile programs are training their future professionals for sustainability.

Identified themes (selective codes) of "Indian Fashion and Textile Design Programs"
Innovation and Technology for Sustainability
Cutting-edge modern technology is being incorporated into fashion and textile

education by organizations like NIFT, NID, Pearl Academy, and Amity University in order to advance sustainability. By providing courses in wearable technology, adaptable apparel, and smart textiles, NIFT places an emphasis on innovation and usefulness. Students use technology and environmental concern to produce innovative solutions, such as solar-powered coats or clothing with sensors for health monitoring. With an emphasis on sustainable material sourcing, NID adopts a user-focused approach when developing adapted apparel projects for people with disabilities. The smart textiles workshops at Pearl Academy help students create clothing with conductive threads for cutting-edge medical monitoring devices. Similar to this, Amity University promotes innovative clothing designs that incorporate sensors for temperature control in order to stimulate creativity. These organizations are prime examples of how technology and innovation can propel sustainability in the fashion sector.

Professional Ethics and Behaviour
The core of these programs is the promotion of ethical ideals, which guarantees that students embrace just and sustainable actions. Pearl Academy integrates programs on ethical fashion, imparting values of sustainable production and fair trading. By holding lectures on ethical production, NIFT improves supply chain transparency. Students at NID reinforce the value of social responsibility by analysing case studies on ethical sourcing and fair labour standards. For aspiring designers, Pearl Academy provides specific courses on moral business conduct, and Amity University encourages socially conscious conduct through community service initiatives. They provide a unique "Behaviour Science" module. Collectively, these educational establishments mould morally aware designers equipped to tackle worldwide environmental issues.

Solutions for Reduced Environmental Impact
Sustainability is emphasized through creative methods to lower carbon footprints and resource usage, as well as ecologically sensitive design. To maximize resources, NIFT emphasizes eco-friendly dyeing methods and zero-waste design strategies. NID investigates waterless dyeing methods, which drastically cut down on resource consumption. By teaching students to make collections out of used textiles, Pearl Academy promotes upcycling and repurposes trash into fashion. Amity University gives students the tools to create eco-friendly solutions by incorporating biodegradable material innovation into their senior projects. All of these initiatives work together to address important environmental issues facing the textile and fashion industries.

Cultural and Socially Responsible Design
Social responsibility and cultural heritage are essential components of sustainable fashion techniques. India's decentralized textile craft system encourages sustainable production while bolstering local economies. Students are encouraged by NIFT to

incorporate traditional crafts like Chikankari into modern designs in order to modernize them. Tribal arts, like Warli paintings, are preserved by NID through projects that highlight their potential for use in textiles. In order to ensure the survival of endangered crafts like Ajrakh printing by modern adaptation, Pearl Academy works with non-governmental organizations. Amity University encourages cooperation between designers and craftspeople by promoting socially inclusive designs that draw inspiration from rural communities. These initiatives demonstrate the intersection of sustainability and cultural preservation in the fashion sector.

Self-Awareness and Professional Communication

Professional development is a core component of sustainability advocacy. Pearl Academy offers courses like "Learning for Life," emphasizing financial acumen, emotional intelligence, and effective communication. Amity University offers personality development programs to improve communication skills, NID promotes self-reflection for expressing design concepts, and NIFT integrates training on public speaking and portfolio presentation.

Entrepreneurship and Leadership

Green entrepreneurship is emphasized in all of the curricula. To assist students in starting sustainable businesses, NIFT runs incubation centres. Students working on ideas like biodegradable fashion brands are mentored by NID. Amity University encourages the creation of environmentally responsible business ideas, while Pearl Academy hosts "Fashion Labs" for sustainability innovation.

Global Design Strategy for Conscious, Inclusive Design

At many places these institute includes a global perspective, and conscious, inclusive design strategy. These programs prepare students for global sustainability challenges. NIFT offers exchange programs with international institutes focused on sustainable design. NID organizes global design conferences, Pearl Academy integrates international case studies on circular fashion, and Amity University introduces global sustainable design challenges in its coursework.

Human-Centred System Thinking

User-centric design is central to their teaching. Other discussed techniques in contemporary teaching-learning activities include human-centred design and sensory design solutions. Workshops on adaptable clothing for a range of needs are held by NIFT. Community-driven sustainability initiatives are the main emphasis of NID. Amity University places a strong emphasis on using design thinking to solve real-world sustainability issues, while Pearl Academy teaches students how to conduct user research to produce inclusive solutions.

Problem-Solving Through Creative Thinking

Creative solutions are encouraged across all institutions. NIFT hosts hackathons on

reducing fashion waste, while NID fosters textile recycling projects. Pearl Academy promotes upcycling to address fast fashion issues, and Amity University supports brainstorming sessions for eco-friendly textile innovations.

Responsible AI and Business Analytics

One characteristic of these programs is the incorporation of technology into sustainable design. These days, artificial intelligence (AI) is applied at several points in the fashion and textile design process to increase efficiency and sustainability. NIFT presents AI-powered solutions for supply chain management and fashion trend forecasting. Amity University employs AI to reduce overproduction, Pearl Academy provides data analytics for inventory management, and NID uses AI projects to optimize fabric.

AR-VR Prototyping

AR-VR techniques are employed during try-ons, prototyping, and the conception stage for visualization. It eliminates waste of labour and materials and saves a great deal of time and effort. Every semester, Pearl Academy offers its pupils a unique technology curriculum that prepares them to use cutting-edge software. Design techniques are changing as a result of virtual and augmented reality. While NID uses AR for immersive prototyping, NIFT uses VR simulations to cut down on material waste. Amity University used AR to create environmentally conscious virtual fashion lines, while Pearl Academy trains students in VR for visualizing sustainable.

Core Theme (Selective Codes) of "International Sustainable fashion and textile design programs"

Environmental Stewardship

Educating students about the environmental impact of textile and garment production, including the use of resources, energy, water, and chemicals, as well as waste generation and pollution.

Social Responsibility

Understanding the social implications of fashion, including labour rights, fair trade, and the impact on communities involved in the production processes, and also the consumer.

Economic Viability: Balancing with economic practicality to ensure that sustainable fashion is not only ethical but also economically viable for all stakeholders.

Cultural Sensitivity

Respecting and incorporating local cultures, traditions, and crafts, and understanding the global impact of local fashion practices.

Aesthetic Innovation

Encouraging creativity in design while maintaining sustainable practices, and

challenging the notion that sustainable fashion cannot be aesthetically pleasing.

Technical Knowledge
Providing technical know-how on sustainable materials, production processes, lifecycle assessment, and end-of-life options for garments.

Critical Thinking
Fostering the ability to critically analyze the fashion industry's practices and to envision and implement sustainable alternatives.

Ethical Leadership and Entrepreneurship
Encouraging students to take on leadership roles and to foster entrepreneurial skills to start their own sustainable fashion ventures.

Interdisciplinary Approach
Combining principles from design, business, environmental science, and social studies to provide a holistic education on sustainable fashion.

Technology Integration
Teaching students about the latest sustainable technologies in textiles and fashion, such as digital fabrication, zero-waste pattern making, and 3D printing.

Collaborative Learning
Encouraging students to work in teams to solve problems, which can help them understand different perspectives and cultural contexts.

Field Trips and Industry Interaction
Visits to local textile mills, craft clusters, and fashion houses to understand the practical aspects of sustainable fashion.

Sustainability Reporting and Communication
Training students to document and communicate their sustainable practices effectively, which is crucial for consumer awareness and brand transparency.

CONCLUSION
This research culminates in a robust framework for sustainable fashion and textile design education, integrating themes from both Indian and international undergraduate programs. By examining the curricula and teaching methodologies employed across leading institutions, this study synthesizes effective approaches to equip future professionals with the knowledge, skills, and ethical values necessary to drive sustainability in the fashion industry.

Framework for Sustainable Fashion and Textile Design

System Thinking and Problem-Solving: Motivate students to use their critical and creative thinking abilities to evaluate intricate systems and come up with original answers to sustainability issues facing the textile and fashion sectors.

Global and Inclusive Design Strategies: Integrate human-centered, inclusive, and conscious design concepts to support a variety of cultural and societal demands in order to advance a global design viewpoint.

Interdisciplinary and Collaborative Learning: Use an interdisciplinary approach to address multidisciplinary problems, encouraging cooperation between academics, industry professionals, and students to develop comprehensive answers.

Experiential Learning and Industry Engagement: Focus on sustainability reporting and good communication techniques while enhancing learning outcomes through field visits, industry contacts, and practical exercises.

Technology Integration for Innovation: To spur innovation and include sustainable practices into the curriculum, make use of business analytics, responsible AI, and cutting-edge technology like AR-VR prototyping.

Environmental Stewardship and Impact Solutions: Develop a sense of accountability for protecting the environment by instructing students on how to lower carbon footprints, efficiently manage resources, and adopt eco-friendly behaviors.

Ethical Leadership and Entrepreneurial Skills: Create moral leaders and entrepreneurs with the know-how to lead innovative projects in the fashion sector and propel sustainable business models.

Professional Ethics and Effective Communication: Encourage self-awareness and professional ethics while stressing the value of transparent, accountable, and efficient communication in furthering sustainability objectives.

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Table 1: "Open Codes" From the course curriculum of Fashion and Textile design education in India

SN	NID	NIFT	Amity	Pearl academy
1	Sustainable material and technology	Technical textile for intuitive clothing, fashion innovation & functional clothing, "adaptive clothing & Wearable technology" innovative and indigenous material	Technology of textile manufacturing	Cutting edge technology
2	Industry perspective		Professional ethics, "cognitive skills, fashion business laws	Sustainability and integrated ethics, professional ethics & behaviour
3	Sustainability, design with the environment, and human senses		Environment study, health, safety	Sustainable and practical solutions, eco-conscious design, environmental awareness,
4	Social responsibility, social science, social development	Fashion, society and culture, design for society	Social responsibility, individual excellence & social dynamics behaviour science"	Social and cultural awareness
5		System thinking	Multicultural competence	Interdisciplinary and multidisciplinary courses

6	Craft economics, fieldwork research	Craft culture, sensitize to traditional practices	Traditional textiles, field trip, craft documentation	Traditional textiles and craftsmanship
7		Communication skill	Understanding self for effectiveness/ ethics & communication	Intellectual, and communication skills, professional communication
8			Entrepreneurship leadership and decision making	Collaborations, practical, industry-ready, entrepreneurial approach, design leadership
9	Inclusive design, conscious fashion	Design strategy, fashion and design thinking	Multicultural competence	Fashion for gender inclusivity, responsible fashion global fashion trends. Global exposure design thinking
10	Human senses	Human-centered, user experience, sensory design,	Health and safety	
11	Creative problem solving	Critical thinking	Problem-solving and creative thinking	Creative, emotional intelligence, critical thinking,
12		AI, IoT, big data and business analytics, artificial intelligence, internet of things, big data and business analytics		AI and responsible ai and ethics
13		Augmented reality, virtual experience design, virtual prototypes 3d CAD, optitex for virtual prototyping		Virtual prototyping, generative design
14				Design for sustainable development

Table 2. "Group Codes" and "Selective codes / Theme" of Indian Institutes Course Curriculum

SN	Group code	Selective codes / Theme
1	Innovation for Sustainability Intuitive, Functional clothing, adaptive clothing and wearable technology	Innovation and Technology for Sustainability
2	Professional Ethics and behaviour Industry perspective	Professional Ethics & behaviour
3	Environment study Eco-conscious Design Human Senses	Solution for Reduced Environmental Impact
45	Design for society Social Responsibility Fashion Society and Cultural	Cultural and Socially Responsible Design
6	Cooperation, collaboration, system thinking, multidisciplinary solution	System Thinking for multidisciplinary issues
7	Craft Culture Field trip Traditional textile	Craft culture and Traditional Textiles
8	Professional Communication Effective Ethical communication	Self-aware & professional communication
9	Entrepreneurship Leadership Decision making	Entrepreneurship and Design Leadership
10	Inclusive Design Global Fashion	Global design strategy for conscious, inclusive design
11	Human Centered, User Experience, Sensory Design,	Human-centered design
12	Problem-solving and creative thinking	Problem-solving through creative thinking
13	Big data, iot, Business Analytics, AI & Ethics	Responsible AI and Business Analytics
14	Digital Design AR _ VR Virtual Prototyping	AR-VR prototyping

Table 3. "Open Codes" From the International course curriculum of sustainable Undergraduate program.

	University of Leeds	Whitcliffe NZ	IFA Paris	RMIT University
	UK	New Zealand	France	Australia
SN	3 years	3 years	3 years	3 years
1	Holistic and practical approach to understanding and addressing the environmental and social impacts of fashion.	Cultivating Ethical Fashion Design for a Sustainable Future. Challenges conventional approaches. Stewards of the planet through their fashion creations.	Integrating Sustainability into Fashion Business. Aligns with the United Nations framework of sustainability	The transformative power of technology. Increasing importance of environmental, social, and ethical practices. The fundamental changes due to advancements in technology.
2	Minimizing environmental impacts	Responsible stewardship of resources	Environmental impacts	
3	Product life cycle analysis	Product life cycle analysis	Product stewardship life cycle analysis	Reshape how clothes are designed, produced, and consumed.
4	Environmental responsibility	Challenges of resource depletion	Three p's: "people, planet, profit."	Circular economy principles
5	Materials and processes	Environmental implications of design choices	Transparency and traceability	
6	Environmental impacts of fashion.	Stewards of the planet	Ecological viability	
7		Ethical sourcing	Supplier audits and transparency	
8	Minimizing and Social Impacts	Stewards of the planet	Social justice and social accountability	
9	Advanced business		Economic efficiency,	Sustainability into fashion business
10	Strategic management, marketing		Business opportunities, control risks, reduce costs,	
11			Boost revenues, increase market share,	

12		Respects various cultural		
13		Draw from their own cultures and histories		Science, and art with traditional fashion
14		Regional focus	Paris-based	
15		Cultural Sensitivity and diversity		Traditional fashion
16	Emphasized	Emphasized	Emphasized	Emphasized
17		Unique design aesthetics	Eco Innovation	Material Innovation
18	Emphasized	Create innovative	Emphasized	Emphasized
19	Skills and knowledge to drive positive change	Upcycled techniques and organic fabrics,		
20		Natural dyeing processes		
21		Zero-waste pattern-making		
22	Encouraged	Think critically	Encouraged	Encouraged
23				
24		Creative Innovation: , develop original design concepts,		
25		Cultivating Ethical Fashion Design		
26		Ethical fashion design	Transparency and Traceability	Ethical practices
27		Ethical change	Corporate Social Responsibility (CSR).	Fashion enterprise
28	Emphasized	Respects ethical values	Emphasized	Emphasized
29		Interdisciplinary Learning:		. Interdisciplinary Approach
30		Integrating technical, theoretical, and professional knowledge		Combining technology with art and science
31				
32		Sustainable Future	Eco-labelling	
33		Sustainable design theories and practices		
34		Fostering sustainability		

35				Transformative power of technology
36				Smart Textile
37				Advancements in technology
38				Sustainable innovation
39				2D and 3D virtual fashion and textile design
40		Regenerative design		Digital production methods
41				
42		Collaboration with industry	Workshops & internships	
43		Industry Relevance	Guest speakers	
44	Real-life case studies	Real-world experience	Industry projects	Industry projects
45		Focused courses, workshops, and internships with		Fashion and textile craft-based
46	Dissertation	Project	Final project	Graduation project
47	Practical projects	Practical projects		Practical projects
48		Instigators in the global fashion industry	International exposure	International focus
49			Case studies	
50			Sustainability criteria	Political issues
51		Infusing global perspective	Bologna Convention principles and grants participants.	

Table 4. "Group Codes" and Selective codes of International Institutes

SN	Axial Code	Selective CODE / Theme
1	Environmental Impact Life cycle study Responsible Stewardship:	Environmental Stewardship
2	Social impact Antropology of garment	Social Responsibility
3	Economic efficiency Business Viability	Economic Viability
4	Cultural Sensitivity Tradisional Fashion	Cultural Sensitivity
5	Aesthetic values Craetivity & Innovation Eco Innovation	Aesthetic Innovation:
6	Technical Knowledge and Skills for Eco fashion	Technical Knowledge
7	Critical Thinking: System thinking	Critical Thinking
8	Ethical Leadership and Entrepreneurship Moral values Fair Trade Conscious Fashion	Ethical Leadership and Entrepreneurship
9	Interdisciplinary Approach	Interdisciplinary Approach
10	Sustainability Reporting and Communication:	Sustainability Reporting and Communication:
11	Technology Integration Regenerative design solution	Technology Integration
12	Collaborative Learning	Collaborative Learning
13	Field Trips and Industry Interaction:	Field Trips and Industry Interaction:
14	Case Studies, Global perspective	Case Studies, Global perspective