

DESIGN INTERNATIONAL SERIES

Direction: Silvia Piardi

Scientific Board:

**Alessandro Biamonti, Ezio Manzini, Carlo Martino,
Francesca Tosi, Mario Piazza, Promil Pande**

Over the last few years the international design research network has become an important reality, which has facilitated the sharing of ideas and opinions, improved understanding of the subject and increased awareness of the potential of design in various socio-geographical contexts.

The current expansion of the educational network allows teachers, students, researchers and professionals to meet, both online and in person.

It would seem therefore that the time is now right to propose a new series of books on design, contributing the construction of the international design community, helping authors bring their work onto the world scene.

The Design International series is thus born as a cultural setting for the sharing of ideas and experiences from the different fields of design, a place in which you can discover the wealth and variety of design research, where different hypotheses and different answers present themselves, in an attempt to draw up a map of Italian design, though in a continuous comparison with the world scene.

Different areas of design will be investigated, such as for example: fashion, interior design, graphic design, communication design, product and industrial design, service and social innovation design, interaction design and emotional design.

Books published in this series are selected by the Scientific Board and submitted to two referees for peer-review.



Il presente volume è pubblicato in open access, ossia il file dell'intero lavoro è liberamente scaricabile dalla piattaforma **FrancoAngeli Open Access** (<http://bit.ly/francoangeli-oa>).

FrancoAngeli Open Access è la piattaforma per pubblicare articoli e monografie, rispettando gli standard etici e qualitativi e la messa a disposizione dei contenuti ad accesso aperto. Oltre a garantire il deposito nei maggiori archivi e repository internazionali OA, la sua integrazione con tutto il ricco catalogo di riviste e collane FrancoAngeli massimizza la visibilità, favorisce facilità di ricerca per l'utente e possibilità di impatto per l'autore.

Per saperne di più:

http://www.francoangeli.it/come_publicare/publicare_19.asp

I lettori che desiderano informarsi sui libri e le riviste da noi pubblicati possono consultare il nostro sito Internet: www.francoangeli.it e iscriversi nella home page al servizio "Informatemi" per ricevere via e-mail le segnalazioni delle novità.

DESIGN RESEARCH IN THE DIGITAL ERA

Opportunities and implications
Notes on Doctoral Research in Design 2020



edited by Lucia Rampino and Ilaria Mariani

D. | . **FRANCOANGELI** OPEN  ACCESS
DESIGN INTERNATIONAL

ISBN: 9788891799913

ISBN e-book Open Access: 9788835100317

Cover by: Ilaria Mariani

Copyright © 2020 by FrancoAngeli s.r.l., Milano, Italy.

This work, and each part thereof, is protected by copyright law and is published in this digital version under the license *Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)*

By downloading this work, the User accepts all the conditions of the license agreement for the work as stated and set out on the website

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Printed by Logo srl, sede legale: Via Marco Polo 8, 35010 Borgoricco (Pd).

Contents

**Designing in an era of transformation
comes with responsibility**

Lucia Rampino and Ilaria Mariani

pag. 9

Human-centered Design Practice

**Human Resource Design.
Steering human-centred innovation
within private organizations**

Martina Rossi

» 23

**Designing for Ambient UX:
Design Framework for Managing User
Experience within Cyber-Physical Systems**

Milica Pavlovic

» 39

**Design For Intercultural Experience:
A Design Framework within User
Experience Approach**

Shushu He

» 55

Digital Transformation

Creativity 4.0. A method to explore the influences of the digital transition on human creativity within the design process

Carmen Bruno

pag. 75

**Toward a Yacht Design 4.0.
How the new manufacturing models and digital technologies [could] affect yacht design practices**

Arianna Bionda

» 91

**Displaying open cultural collections.
Interface characteristics for effective cultural content aggregators**

Giovanni Profeta

» 107

**From Adriano Olivetti's project:
Eduardo Vittoria. Research, drawing and design. New methods of representation to enhance modern architecture**

Sara Conte

» 125

Ethics and social awareness

**Personal Interaction Design.
Introducing into the Design Process the Discussion on the Consequences of the Use of Personal Information**

Laura Varisco

» 143

**Delaying Obsolescence in Digital Products.
Interdisciplinary Research through
Emotionally Durable Design and Well-Being
in the Z Generation**

Mario de Liguori

pag. 163

Design for Sustainability in Fashion

Trinh Bui and Alba Cappellieri

» 183

Ethics and social awareness

Design for Sustainability in Fashion

Trinh Bui and Alba Cappellieri

Department of Design, Politecnico di Milano

Abstract

For many years, researchers and designers have focused on answering the question of how fashion can be more sustainable; however, the fact is that fashion has become one of the most polluting industries in the world. The purpose of this study is to investigate and develop a consolidated knowledge-base and know-how to support and equip fashion designers in the design process, with a focus on Accessory Design. To achieve this goal, three research phases have been conducted, including (1) the Preliminary Research phase, to explore and describe the dynamics and factors affecting the implementation and popularizing Sustainable Fashion; (2) the Prototyping and Assessment phase, to develop and systematize the consolidated knowledge-base and know-how to support the role of design in applying and spreading Design for Sustainability in Fashion (DfS.F); (3) the Reflection phase, to present a retrospective analysis, generalize the results of the research, and propose the potential path for future research. As a result, DfS.F design methods and tools were assessed through participatory research, and their effectiveness was evaluated through a series of pilot workshops and courses, as well as projects in collaboration with stakeholders.

Introduction

Fashion is “a powerful communicator”, and it represents the diversity of cultures around the world, expressing individual or community identity (Black, 2008). Starting from the first Industrial Revolution, the fashion industry has become a mature industry, characterized by mass production and globalization

(Arvidsson *et al.*, 2010; Plank *et al.*, 2014). In parallel with the achievements of the fashion industry in economic terms, this industry worth trillions of dollars is also full of contradictions and paradoxes. It is also considered one of the most unsustainable and polluting industries in the world (Schor, 2005; Boström *et al.*, 2016; Cappellieri *et al.*, 2019; Rana *et al.*, 2015; Ricchetti and Fisa, 2012; Bertola *et al.*, 2018, Armstrong *et al.*, 2015; Joergens, 2006). In other words, fashion products have a negative impact on the environment and society at every stage of their life cycles from production, distribution, and use to disposal. However, over the past few decades, a new movement has emerged to counteract the existing problems of the fashion industry – that is, “Sustainable Fashion”. The concept of sustainable fashion has received attention on a global scale; it is not only a trend, but has become one of the essential values of fashion designers and brands and deals with facing environmental and social challenges. Therefore, in this Ph.D. research, we have focused on the role of design in promoting Design for Sustainability in Fashion (DfS.F), presenting a set of knowledge-base and know-how for environmentally and socio-ethically fashion designs, with a focus on accessory design; at the same time, the results of the study have also pointed out the pioneering role of design in the journey to find alternative solutions for future fashion.

Fashion and Sustainability

In an era of consumerism, pragmatism has crept into every street, participating in the daily lives of people from urban to rural settings. Fashion with frequently changing characteristics, such as “trendy” and “obsolete”, makes things happen quickly (Bhardwaj *et al.*, 2010). The feeling of “obsolete” leads to increased consumer desire; thus, it encourages the industry and consumers to look for new things in a continuous cycle of demand, production, consumption, and disposal. It can be seen that the challenges and negative impacts facing the fashion system are related to environmental, social, cultural, and economic impacts. The five key issues in the relationship between fashion and Sustainability that have been discussed are: (1) overuse of resources; (2) pollution problems taking place on a global scale; (3) working environment; (4) trade conditions and (5) excessive consumption. As such, existing problems of contemporary fashion show a contradiction with the definitions of Sustainability. How can these contradictions be resolved if we continue to produce and consume fashion? This is a big question for the entire fashion system in the process of finding a way to meet the transition towards Sustainability.

During the last decades, various definitions of Sustainable Fashion have been shown. In the original definitions, it was defined as fashion clothing combining the principles of fair trade, with fairly paid labor (no sweatshops) and the use of biodegradable organic cotton (which will not harm the environment or workers) (Joergens, 2006; Clark, 2008). Recently, the trend has shifted from clothing and textiles to a broader and more generic definition of fashion, which can now be defined as clothing, footwear, and other accessories manufactured, marketed, and used — in the most sustainable way possible, considering both environmental and socio-economic aspects¹. However, another noticeable change of attention, especially in the entire Design for Sustainability process, is first focusing primarily on products, then moving on to focus on sustainable product-service systems (Fletcher, 2008; Vezzoli, 2010; Armstrong *et al.*, 2015; Stål *et al.*, 2017). Therefore, the main objective of DfS.F is not only to focus on products but also to consider other factors in the entire fashion system, as well as education on sustainable fashion design in higher education institutions.

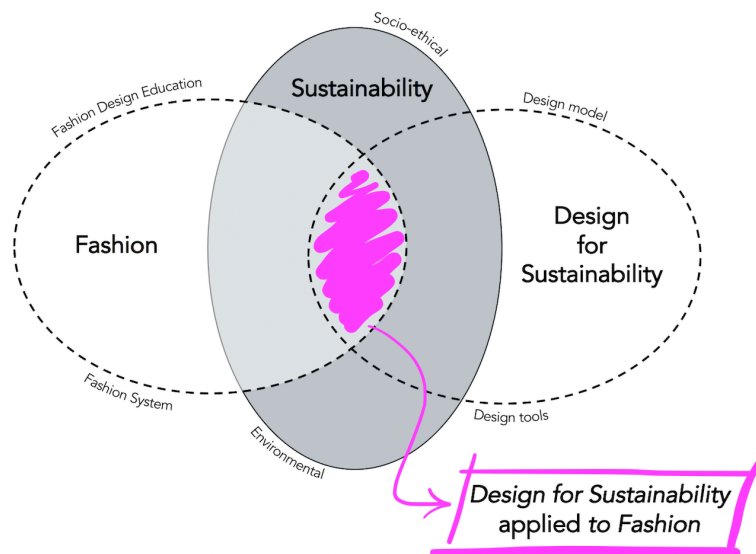


Fig. 1 – Research focus: Design for Sustainability (DfS) applied to fashion as great potential and win-win approaches

¹ www.greenstrategy.se/sustainable-fashion/what-is-sustainable-fashion

Research Hypothesis

Based on the above-mentioned understanding and knowledge gap, the research assumes that providing potential knowledge-base and know-how of Design for Sustainability (DfS) innovations takes place in fashion design processes, which can be oriented and stimulated. Thus, the research has formulated the Research Hypothesis: “Design for Sustainability applied to fashion design processes can build up a proper set of knowledge-base and know-how as far as this is based on life cycle and functional approaches. This can support and equip fashion designers in designing and orienting the process of introduction and diffusion of Sustainability. Furthermore, designing and adopting Sustainable Fashion and offering a viable model might have great potential and win-win approaches, i.e., changing conscious knowledge of customers in consumption processes, and stimulating innovation in individual and social cognition.”

Research Questions

To clarify the research hypothesis mentioned above, this research focused on exploring and answering the Research Questions:

- 1. How can Design for Sustainability integrate into fashion as a promising approach for sustainability?**
 - a. What are the dynamics and factors that facilitate DfS applied to fashion?
 - b. If it is possible to manage and orient this process, how can it be done?
- 2. Can the diffusion of Design for Sustainability in Fashion be stimulated?**
 - a. If yes, what knowledge-base and capabilities are required by a fashion designer?
 - a. What are the design methods and tools that can be used in practice and how can they spread them?

Research Objectives

DfS is a potential model to address the environmental and socio-ethical challenges that exist in the fashion system. However, the process of transforming to sustainable systems often encounters barriers in industrialization

and globalization because these systems have the main goal of producing a product faster at a cheaper cost to meet all the customers' needs, and which is continuously promoted by trends and obsessions with consumerism. Furthermore, although sustainable fashion has become a widely discussed topic in high-income countries, it is a new concept in the context of low-income countries; and the role of fashion designers has not really promoted the diffusion of sustainability.

General objective

The main goal of this research is to explore factors that affect the transformation of the fashion system towards sustainability, and to characterize the model of sustainable fashion. At the same time, we also intend to investigate potential strategies and approaches that can be applied to the design process and promote the role of design in this shift by understanding and building a set of knowledge-base and know-how, as well as establishing proper guidelines and tools for a fashion designer to approach sustainable fashion.

Specific objectives

The general objective can be broken down to three more specific objectives that would together achieve the overall goal of the project as follows:

1. to assess and verify DfS applied to fashion design processes;
2. to define the knowledge-base for a new design role in order to apply it to the creative and productive process of fashion as well as accessory design;
3. to define design know-how in terms of approaches, methods, and tools to support design practice, as well as to tailor the functionality of this framework so that it is suitable for the application of these systems in various study contexts.

Methodology

The main goal of this research is to explore the potential approaches of DfS applied to the Fashion system (a set of Research Question 1) and provide and equip a proper knowledge-base and know-how to support and enable designers to apply DfS to Fashion (a set of Research Question 2).

Design-based research (DBR) is a suitable type of research methodology applied in this PhD study. DBR is defined as a method that is built on the theory of the learning environment in order to create new theories and frameworks for conceptualizing learning processes. The focus is on simultaneously

developing a design and generating new theory (Barab, 2006) that includes the concepts of “design-research” and “development research” (Oha *et al.*, 2010). It seeks to increase the impact and transfer of educational research from a theoretical scope to improved practical application. In addition, DBR emphasizes the need to build theory and improve both practical application and research. These features of Design-based research have made it relevant to this study, with the aim of integrating and developing the DfS.F design principles, while testing and improving DfS.F. in an innovative learning environment (Reimann, 2011; Wang *et al.*, 2005; Anderson *et al.*, 2012). Thus, this is a method designed to solve complex problems in the actual context between educators in collaboration with students. Based on DBR, the research strategy followed three main stages, which are listed below.

1. *Research stage 1 – preliminary research*: needs and context analysis, review of literature, development of the conceptual framework of the study;
2. *Research stage 2 – prototyping and assessment stage*: design stage consisting of iterative research activities, with a series of pilot workshops and courses, as well as prototype projects with fashion companies, aiming to improve and refine the design approaches for DfS in Fashion;
3. *Research stage 3 – reflection stage*: this stage often includes a retrospective analysis, followed by the specification of design principles and refinement of the conceptual framework.

Preliminary research

This stage was based on the review of literature and research on case studies. It was aimed at providing an overview on the concept of sustainable fashion and how DfS applied to Fashion systems. Based on the results of the review of literature and case studies, a conceptual framework was developed, adjusted and refined during the study. Thus, it answers the set of Research Question 1.

Literature review

The literature review was focused on the Sustainable Fashion design field, and investigating the existing studies focused on how DfS applied to fashion products and services systems. In particular, the main issues were conducted to:

- explore the challenges and opportunities of DfS in the fashion system;
- review existing research on the relationship between Fashion and Sustainability as well as the role of fashion designers in this context;
- investigate existing tools and methods of DfS that can be used to applied DfS in Fashion;
- examine the challenges and opportunities that fashion designers encounter in the design and production processes for sustainable fashion.

Case study research

Case study analysis, searching for DfS applied to fashion through desk research and semi-structured interviews, was conducted in order to:

- explore the phenomenon subjected to research through cases, and the challenges and opportunities of design for Sustainability on fashion;
- understand how DfS takes place, as well as what factors influence fashion design for Sustainability;
- assess the mechanism and dynamics in the development and diffusion of sustainable fashion models.

The objective of the case study research is to investigate the DfS.F journeys made by twenty-five fashion brands in introducing sustainable fashion on the market all over the world, both fashion clothing in general and fashion accessories in particular. The researcher wanted to understand how DfS takes place and what factors influence the companies' work, and thus validate and develop the conceptual framework as well as verify the hypothesis.

The case study format of each case was collected and described in a structured and similar format in order to cross-reference all cases with analysis and comparison.

Conceptual framework development

After the literature review and case study analysis research, the outcomes were used to build a conceptual framework in order to:

- clarify the concept of DfS and the relationship between Sustainability and Fashion.
- provide the context of DfS.F, which interprets the variables as well as the study findings.
- promote theory development that can be used to support an analytical strategy and efficient process.

The results of the literature review provided an overview of the framework. The starting point of the framework was determined by the paradigm shift of the DfS.F model: from traditional fashion production to the Sustainable Fashion model with a developed DfS.F idea or strategy. This change is directed to the process of applying DfS to the fashion system with four innovation levels of DfS.F in which the study explores how these changes are promoted. The literature review also shows that in this transition, there are relative actors.

The second point of the conceptual framework is the limitations for the application of DfS.F. In fact, the way the contemporary fashion system operates is considered unsustainable and contains the paradox. From an environmental standpoint, the excessive use of resources by the fashion industry is polluting and depleting resources, destroying the environment by the amount of toxic waste that has adverse effects on the ecosystem, region, and planet. From a socio-ethical point of view, natural resources are exhausted and the habitat of ecosystems and local communities are destroyed. For example, textile factories use toxic chemicals that release toxic substances into the environment. Polluted water runoff leads to irreversible damage to ecosystems and communities in a large area. Thus, the researchers found in the existing literature the need to transform fashion design, production, and business models into sustainable models to reduce the pressure on the depleted planet, as green resources are continuously reduced and overloaded by pollutants. Therefore, implementing DfS.F can benefit the environment because it restricts the use of natural resources by reducing or replacing materials, such as using recycled materials or reusing leftover materials. DfS.F also enhances the use of environmentally friendly materials and local raw materials to help reduce pollution and ecological footprints in the industry's materials production and distribution. From a socio-ethical point of view, DfS.F recommends companies to be transparent about labor rights and the working environment of fashion industry workers; sustainable fashion companies use local labor and disadvantaged people and people with disabilities, thereby creating local employment opportunities and empowerment.

Application of the DfS.F model should be based on a combination of products and services. It has a complex supply chain involving stakeholders, e.g., raw material suppliers, manufacturers, raw materials manufacturers, product manufacturers, distributors, retailers, service providers, and customers and users alike. Indeed, the DfS.F configuration consists of four levels that require a long-term relationship between stakeholders in order to

achieve environmental sustainability goals and bring profits to stakeholders and benefits to customers, because customers are the decisive factor for the development and spread of Sustainability and this transition.

Prototyping and assessment stage

The prototyping and assessment stage was aimed at refining the potential approaches and strategies to apply DfS in Fashion and the needed capabilities of fashion designers to design and implement Sustainable Fashion in specific contexts. It was also to test the design knowledge-base and know-how to support design practice. Thus, this stage answers the set of Research Question 2.

Development of the design approach and tools

Based on the results of the first stage, existing approaches and tools were systemized. An analysis of the existing approaches and tools was undertaken in order to highlight strengths and weaknesses in the process of applying DfS in Fashion. This provides the ability to choose potential approaches adopted and adapted for the specific context (in design practice and design education in Vietnam).

Implementation and assessment in design education (pilot workshops and courses)

The design approach was adopted in five pilot workshops and three pilot courses aimed at applying proper methods and tools of DfS in Fashion, focusing on designing the strategy to facilitate the introduction of the concept of DfS and Sustainable Fashion and diffusing Sustainability in design education.

These consist of three pilot courses and five design workshops with undergraduate students from two universities (at Fashion Department, the University of Industrial and Fine Arts and Design Department, FPT University in Hanoi), and stakeholders in two cities located in the North (Hanoi) and South (Ho Chi Minh city) of Vietnam. The objectives of the trial were:

- to diffuse and strengthen Design for Sustainability for young designers;
- to apply design theory to practical application with the relevant environmental and socio-cultural context;

- to stimulate collaboration between universities/young designers and society;
- to enhance the role of design education towards sustainability in higher education institutions.

During the pilot workshops, students were asked to explore the DfS concept and design products/services by applying DfS principles and approaches to introduce and diffuse the concept of Sustainability. Thus, the approaches and the tools were adapted and tested to figure out the proper and potential design approaches in terms of effectiveness and practicality. Finally, a questionnaire was used to evaluate the design approach and test the strategy applied.

Pilot courses focusing on Sustainable Fashion were integrated into the Accessory Design course (the course was part of the Bachelor program in Fashion Design). Three courses were undertaken at the Fashion Department, University of Industrial and Fine Arts in collaboration with Gosto company and some local fashion companies. The goal of these courses was to design sustainable fashion accessories (shoes, bags and jewelry) by applying DfS approaches. Finally, a questionnaire was used to evaluate the design approach and test the strategy applied.

Implementation and assessment in design experiences

In parallel with implementation and assessment in design education, the design approach and tools were applied in the prototyping project focused on accessory design with Gosto company in Ho Chi Minh city, Vietnam. The author was directly involved in the projects, and took the roles of both the designer and the researcher, participating in the design activities as well as interacting with the other practitioners. The project aims to design fashion products by applying the principles of DfS and also testing the proper approaches focusing on shoe and bag design.

Refinement of design approaches and development of the design knowledge-base

In addition to assessing DfS applied to Fashion design experiences (pilot courses, workshops, and projects), an evaluation by experts and practitioners was carried out. The continuous application and evaluation of applying design approaches in design experiences enabled the researcher to evaluate the design intervention to figure out those strengths and weaknesses. Thus,

the continuous application and evaluation of the proper approaches and tools brought to reflect on the knowledge-base needed by designers to integrate DfS in the design process.

Reflection stage

The purpose of the third stage of the research was aimed at a retrospective analysis of the study. This stage focused on the main research findings, limits and generalizations of this research, and recommendations for further research programs. The research activities have reflected on the methodology applied and the research results as an operational tool capable of guiding and supporting designers, which can apply in both Vietnamese and other contexts, to engage and integrate DfS.F.

Core research contributions

This research focused on the promising models of DfS in Fashion that have been studied for the past several decades. The core contributions of this study include the key points listed below.

First, a framework describing and explaining how to innovate DfS.F has been developed. This framework described the paradigm shift of the DfS.F model: from traditional fashion production to the Sustainable Fashion model with a developed DfS.F idea or strategy. This change is directed to the process of applying DfS to the fashion system with four innovation levels of DfS.F in which the study explores how these changes are promoted. Then, the conceptual framework introduced the limitations for the application of DfS.F.

Second, the research has contributed to clarifying the challenges that the fashion industry is facing and the need to change. Based on an overview of the research and results of the first part, definitions related to DfS and SF were conceptualized and the boundaries of Sustainable Fashion were discovered. The research also identified factors that affect DfS.F, which can be used as a guide to identifying the elements needed to implement DfS.F.

Third, the research has summarized and systematized the Sustainable principles and Sustainable frameworks for Sustainable Fashion. These can be used as a guide to determine sustainable approaches in fashion.

Fourth, the research proposes a new role for fashion design in the process of converting the traditional model to the DfS.F model towards sustainable development.

Fifth, the study also proposes the necessary capabilities and skills to equip fashion designers to operate the DfS.F model at strategic levels based on new context analysis. This is the design knowledge base that designers need to develop.

Sixth, the research has developed a DfS.F model, and detailed guidelines and tools, to assist fashion designers in implementing and managing the design process.

Finally, the study summarized and proposed the development of an operating tool capable of guiding and assisting designers in their design work: a handbook intended to provide theoretical knowledge and practical methods and tools to help students and fashion designers to implement DfS.F.

Conclusions

Design for Sustainability in Fashion (DfS.F) is making significant strides towards Sustainability. It can have the ability to radically transform the fashion system and create constant changes, from transforming products to modifying and renewing the fashion industry (Fletcher and Grose, 2012). Thus, designers should be aware of their responsibilities in implementing ethical and sustainable activities. To support this transformation, and play their role successfully, designers need to be equipped with a comprehensive knowledge-base and know-how on fashion in general and DfS.F in the new context. It must be emphasized that to achieve sustainable goals, designers need to be equipped with a broad vision, capabilities and skills to deal with “wicked problems” and the ability to adopt sustainable design strategies during the time. In other words, the designer must understand the appropriate knowledge-base, aiming to provide a coherent view of fashion and sustainable thinking. Awareness about DfS.F, when applied to any production and business model with barriers and drivers, is also a requirement for designers in a series of new roles, in which designers focus on a specific fashion field and integrate their work with sustainable ideas. Also, awareness means we understand the different skills necessary for designers to positively contribute to the unprecedented transformation process taking place in fashion.

The doctoral research started with a review of literature and case study best practices, and defined a conceptual framework for DfS.F. These studies demonstrated the potential of applying DfS in the fashion system; thus, a new design model has been proposed with the creation and development of appropriate methods and tools to support this model. The study has also pro-

posed to expand the research area to improve and refine the research results and identify characteristics for other areas. Triggering a broader discussion and collaboration with researchers and experts in the fields of fashion and DfS can be valuable in establishing a network of professionals in multidisciplinary fields to work on and explore existing issues in the fashion field.

References

- Anderson, T., and Shattuck, J. (2012). Design-based research: A decade of progress in education research? *Educational researcher*, 41(1), 16–25.
- Armstrong, C. M., Niinimäki, K., Kujala, S., Karell, E., and Lang, C. (2015). Sustainable product-service systems for clothing: exploring consumer perceptions of consumption alternatives in Finland. *Journal of Cleaner production*, 97, 30–39.
- Arvidsson, A., Malossi, G., and Naro, S. (2010). Passionate work? Labour conditions in the Milan fashion industry. *Journal for Cultural Research*, 14(3), 295–309.
- Barab, S. (2006). *Design-Based Research: A Methodological Toolkit for the Learning Scientist*. Cambridge, UK: Cambridge University Press.
- Barnes, L., and Lea-Greenwood, G. (2006). Fast fashioning the supply chain: shaping the research agenda. *Journal of Fashion Marketing and Management: An International Journal*, 10(3), 259–271.
- Bertola, P., Vacca, F., Colombi, C., Iannilli, V. M., and Augello, M. (2016). The Cultural Dimension of Design Driven Innovation. A Perspective from the Fashion Industry. *The Design Journal*, 19(2), 237–251.
- Bhardwaj, V., and Fairhurst, A. (2010). Fast fashion: response to changes in the fashion industry. *The international review of retail, distribution and consumer research*, 20(1), 165–173.
- Black, S. (2008). *Eco Chic: The Fashion Paradox*. London, UK: Black Dog Publishing.
- Boström, M., and Micheletti, M. (2016). Introducing the sustainability challenge of textiles and clothing. *Journal of Consumer Policy*, 39(4), 367–375.
- Cappellieri, A., Tenuta, L., and Testa, S. (2019). *Distributed production and sustainability strategies for fashion*. In M. Ambrosio, and C. Vezzoli (Eds.), *Designing Sustainability for All*, pp. 228-232.
- Clark, H. (2008). SLOW+ FASHION—an Oxymoron—or a Promise for the Future...? *Fashion Theory*, 12(4), 427-446.
- Fletcher, K. (2008). *Sustainable Fashion and Textiles: Design Journeys*. London: Earthscan.
- Joergens, C. (2006). Ethical fashion: myth or future trend? *Journal of Fashion Marketing and Management: An International Journal*, 10(3), 360-371.
- Oha, E., and Reeves, T. (2010). The implications of the differences between design research and instructional systems design for educational technology researchers and practitioners. *Educational Media International*, 4(47), 263–275.

- Plank, L., Rossi, A., and Staritz, C. (2014). *What does 'Fast Fashion' mean for workers? Apparel production in Morocco and Romania*. In Rossi, A., Luinstra, A., Pickles, J. (Eds.), *Towards Better Work. Understanding Labour in Apparel Global Value Chains* (pp. 127-147). London, UK: Palgrave Macmillan.
- Rana, S., Pichandi, S., Karunamoorthy, S., Bhattacharyya, A., Parveen, S., and Figueiro, R. (2015). *Carbon Footprint of Textile and Clothing Products*. In S. S. Muthu (Ed.), *Handbook of Sustainable Apparel Production*. Boca Raton, FL: CRC Press, pp. 141-165.
- Reimann, P. (2011). Design-based research. In L. Markauskaite, P. Freebody, & J. Irwin (Eds.), *Methodological choice and design: Scholarship, policy and practice in social and educational research*. Dordrecht, The Netherlands: Springer, pp. 37-50.
- Ricchetti, M., and Fisa, M. L. (2012). *The beautiful and the good. A View from Italy On Sustainable Fashion*. Venezia, Italy: Marsilio.
- Schor, J. B. (2005). Prices and quantities: Unsustainable consumption and the global economy. *Ecological Economics*, 55(3), 309–320.
- Stål, H. I., and Jansson, J. (2017). Sustainable consumption and value propositions: Exploring product–service system practices among Swedish fashion firms. *Sustainable Development*, 25(6), 546–558.
- Vezzoli, C. (2010). *System design for sustainability. Theory, methods and tools for a sustainable "satisfaction-system" design* (2nd ed.). Milano, Italy: Maggioli editore.
- Wang, F., and Hannafin, M. J. (2005). Design-based research and technology-enhanced learning environments. *Educational technology research and development*, 53(4), 5–23.