

Bringing responsible fashion approaches to the fashion industry: a new educational model

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Abstract

In a rapidly changing global economy, skills largely determine competitiveness and the ability to stimulate innovation in the businesses of the future.

The integration of production, educational and scientific systems becomes the new method to address and manage the complexity in the contemporary time, but also a determining factor for the localization of global production cycles, in a moment when the opening of global markets, and the pandemic in 2020 and 2021, have made it clear that the problem of the updating of the operating dynamics within companies have taken on a global significance.

The United Nations have described in the Global Goals for Sustainable Development, the issues that must be addressed contextually and in interdisciplinary terms for the future of economic growth and social cohesion.

We find ourselves in a challenging moment of big transitions: what is known about industrial production has to be re-evaluated in light of the progressive shift towards the Industry 4.0, that requires to companies new strategies and organizational models, changes in infrastructure, manufacturing technologies, human resources and management of practices (Ghobakhloo, 2018). When focusing on the Italian economy, it is important not to distract attention from the local features of a manufacturing (Magni & Noè, 2017) made of small and medium enterprises, often connected in “production clusters with a strong rootedness in a specific local context” (Deserti & Zurlo, 2011, p.2). There is the urgent the need to define and pursue an Italian way of Industry 4.0, and this is, to Visconti “an entrepreneurial challenge: we must invest resources, develop skills, innovate in processes, invent original answers for everchanging markets” (Visconti in Magni and Noè, 2017, p. 9). It may be said that the challenge is not just entrepreneurial, but for design is practical and educational:

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the scientific community is wondering whether and how the methods, tools, and methodological approaches codified so far can face –or help– this transition, and to envision new ones.

This article presents the research work made towards the construction of a new educational model of the 1st level Master Degree in Fashion Direction in Product Sustainability Management, provided by the Milano Fashion Institute in collaboration with the Camera Nazionale della Moda Italiana, whose purpose is to focus on how sustainability, in all its aspects, is radically changing the way in which fashion companies operate and what are the consequences, in terms of knowledge and skills needed for the training of the managers of the future. The model methodology has been structured with an exploratory research made of inductive and deductive processes (Creswell, 2014; Bauer and Gaskell, 2013). The research approach was systemic-constructivist and based on the object of study, to provide the basis for a transdisciplinary approach that is relevant in the current complexity of the project as it is tightly related with the sustainability theme.

In this complexity, the Master in Fashion Direction in Product Sustainability Management had also the purpose to respond to the objectives of the European Skill Agenda of the European Commission, which calls for a common commitment to implement reforms in several strategic sectors and focuses on three main lines of activity:

1. increase the quality and relevance of skills training;
2. make skills and qualifications more visible and comparable;
3. improve the analysis of skill needs and related information to enhance the professional choices.

This is precisely the dimension of goals – that recalls the need for production systems capable of managing a multidisciplinary approach – that has to be applied also in training; design thus becomes the engine for education and professional training leading to the convergence of different sciences and disciplines, which find their complementarity in a joint application. The obtained transferable skills, as well as the ability to work in groups, creative thinking and the ability to solve problems, become the driving force for future development.

Keywords: design education; sustainable fashion; industry; sustainability; Made in Italy

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Educational paths for sustainable fashion. Why is this relevant

In a global economy that is rapidly changing, competencies – in the broader meaning of what a person knows, understand and is able to do – will largely determine competitiveness and the ability to stimulate innovation in the enterprises of the future. Sustainability is not an abstract concept nor a model applicable according to standard rules. For this reason, instead of referring to an all-encompassing and often vague idea of environmental protection, we prefer to recall the concept of Systemic sustainability expressed by Alexander Laszlo, where “a “system” may be described as a complex of interacting components together with the relationships among them that permit the identification of a boundary-maintaining entity or process” (Laszlo and Krippner, 1998, p. 48) and thus “Systemic sustainability is a process of development (individual, organizational, or societal) involving an adaptive strategy of emergence that ensures the evolutionary maintenance of an increasingly robust and supportive environment” (Laszlo and Laszlo, 2011, p. 12). If we transfer the concept to the fashion system, the individual, organizational and societal aspects have to be considered by an industry that deals with global production cycles and has to keep the systemic sustainability approach when acting on and within the environmental, educational, scientific areas, to find new way to face and manage the contemporary complexity.

We find ourselves in a challenging moment of big transitions and what is known and established about industrial production has to be re-evaluated in light of the progressive shift towards the Industry 4.0, that requires to companies new strategies and organizational models, changes in infrastructure, manufacturing technologies, human resources and management of practices (Ghobakhloo, 2018). The current state of global markets brings the fashion industry in a state of high nervousness and uncertainty, as the business world is bracing for a slowdown in growth in the global economy. The covid-19 pandemic turned the tables in terms of digitisation and sustainability, areas in which “the fashion industry is still playing catch-up as the challenges in these areas become more complex” (The State of Fashion, 2020, p.7). Being fashion a global business with global supply chains, it is clear how the problems of updating operational dynamics within companies have taken on global significance, while the whole system has often underestimated its impact on the development of our planet. Fashion is a \$2.5 trillion-dollar industry and the second highest user of water worldwide, producing 20 percent of global water waste (UNECE, 2018); 10 percent of the global carbon emissions (The State of Fashion, 2020); and sending to landfills the 85 percent of textiles, i.e. 21 billion tons a year (EPA, 2020). It is also closely linked to labor, gender and poverty issues, as 1 in 6 people in the world works in a fashion related job, and 80 percent of the labor force throughout the supply chain are women (UNECE, 2018). The demand for clothes and other goods that define middle-income lifestyles is previewed to rise and if consumption continues at its current rate, there will be three times as many natural resources needed by 2050 compared to what was used in 2000 (Ellen McArthur Foundation, 2017). With these data in mind, it becomes clear that the development of the fashion industry has a significant impact

on the achievement of the UN Sustainable Development Goals (SDGs), also called Global Goals for Sustainable Development¹: issues that must be addressed in interdisciplinary terms for the future of economic growth and for social cohesion. The fashion industry has an evident connection with a lot of SDGs, among others on SDG 12, committed to ensuring sustainable consumption and production patterns; on SDG 8 that promotes decent work and inclusive and sustainable economic growth; on SDG 6, concerning water pollution and the release of hazardous chemicals and materials, treatment of wastewater and water-use efficiency; on SDG 13, that calls for a urgent action to combat climate change and its impacts, ‘with textile production generating more greenhouse gas emission than all international flights and maritime shipping combined (UNECE, 2018); SDG 5, about gender equality, with the 75% of factory-based garment workers that are women (EU commission, 2017); and also SDG 1 that aims at eradicating poverty and is influenced by the salaries paid to millions of people working in the apparel industry in developing countries that do not reach the living wage.

For the first time in 2020, “sustainability topped the list of the biggest challenges facing the industry, and it was also named the biggest opportunity” (The State of Fashion 2020, p.14) and the goals for fashion definitely met the ones defined by the United Nations. According to the Pulse of the Fashion Industry 2019 report, the training of designers is one of the key activities for fashion businesses to expand sustainability actions to scale. “Designers have a key role in creating more opportunities for sustainable consumption and production” (Parker and Dickson, 2009, p.14), and to do this they have to develop critical thinking and skills necessary for a sustainable future through formal and informal education (UNESCO, 2017).

The paradigm shift in education must be designed responding to the objectives of the new skills agenda of the European Commission² which calls for a common commitment to implement reforms in a number of sectors in which the action of the European Union brings greater added value and focuses on three main lines of activity:

- increase the quality and relevance of skills training;
- make skills and qualifications more visible and comparable;
- improve the analysis of skills needs and related information to improve career choices.

This is the direction taken for the conception the curricula of the Master in Fashion Direction in Product Sustainability Management (PSM) that is the case study presented in the following paragraphs of the present article. Provided by the Milano Fashion Institute in collaboration with Camera Nazionale della Moda Italiana (CNMI), the national chamber of Italian fashion, the purpose of the PSM Master is to focus on the contemporary commitment that the fashion system is being called at about sustainable choices, actions, and practices.

Being grounded on the Italian territory and being connected to Camera Nazionale della Moda Italiana, the approach and the vision taken by the team of Milano Fashion Institute has to consider a focus on the Italian economy and on the Italian fashion system: it is important not to distract attention from the local features of a manufacturing (Magni and Noè, 2017) made of small and medium enterprises, often connected in production clusters with a strong rootedness in a specific local context (Deserti and Zurlo, 2011). Even if this may seem a narrowing of the area of intervention and therefore a possible simplification of the variables, it is a challenge that adds complexity: working in such a specific context does not allow researchers to narrow their investigation or to leave aside the global perspective on the above-mentioned problems. The Italian fashion industry is indeed “growing within the dynamics of the new global dimension”, with the support of creative and cultural industries that “are concrete expressions of the current international collective recognition of the value of creativity as an active force for innovation and economic and social growth, playing a remarkable role in broadening and empowering the boundaries of the field of action” (Scorcella, 2016, p.xxx). There is the urgent the need to define and pursue an Italian way of Industry 4.0 and of a sustainable development, and this is, to Visconti “an entrepreneurial challenge: we must invest resources, develop skills, innovate in processes, invent original answers for everchanging markets” (Visconti in Magni and Noè, 2017, p. 9). It may be said that the challenge is not just entrepreneurial, but for design is practical and educational: the scientific community is wondering whether and how the methods, tools, and methodological approaches codified so far can face –or help– this transition, and to envision new ones.

Design therefore becomes the engine for education and professional training in which transferable skills, as well as the ability to work in a team, creative thinking, and the ability to solve problems, become the driving force for the development of a system of products, not necessarily tangible, capable of fulfilling contemporary demands.

Methodology behind the Master.

The educational model of the Master in Fashion Direction in Product Sustainability Management (PSM), provided by the Milano Fashion Institute in collaboration with Camera Nazionale della Moda Italiana (CNMI), aims to focus on how sustainability, in all its aspects, is radically changing the "way" of operating of fashion companies and what are the consequences, in terms of knowledge and skills necessary for the training of managers of the future.

For the conception of this educational model the research team started from a reflection on the systemic dimension of the problems by understanding that the physical product, of a company attentive to sustainability, is just one of the possible results that can be obtained and that ‘new solutions can be created in different way: they can be “invented” by designer or be “found” in society. They can emerge from studies of designer evolving together available technologies and social demands’ (Vezzoli and Manzini, 2008, p.48).

In the Communication “A Strong Social Europe for Just Transitions” of 14 January 2020³ vocational education and training (VET)⁴ for sustainable competitiveness, social fairness and resilience is an important part of the ongoing implementation of the European Pillar of Social Rights strengthening principle 1 “education, training and lifelong learning”. It is catering for the preparation of young people to successfully enter working life and for the upskilling and reskilling needs of people of working age for multiple purposes: for people in employment to help them to continuously upgrade their skills, adjust them to the changing work requirements or negotiate job changes, and for the unemployed to help them acquire the skills needed to re-enter the labour market; and more generally to empower the learners with the knowledge, skills and attitudes to thrive in their professional, social and personal development. Especially with the pandemic the approach to VET has changed; if in the last thirty years, especially in Italy, this has not been considered as important as the university level, today professional training is appreciated as it promotes specific and transversal professional skills, facilitates the transition to employment, and it maintains and updates the skills of the workforce according to the needs of the reference sectors by focusing and investing in transferable skills, such as the ability to work in a team, creative thinking and the ability to solve problems (Bianchi, 2018).

Going back to the Global Goals for Sustainable Development there is a need for production systems that can manage a multidisciplinary approach also in training, leading to the convergence of different sciences and disciplines, which find their complementarity in the joint application. “Interoperability is the characteristic of a product or system to work and interact with other products or systems without any restrictions, where humans enter as interfaces within a hybrid cyberphysical model” (Vezzoli and Manzini, 2008, p.48).

The model has been structured with an exploratory research made of inductive and deductive processes (Creswell, 2014; Bauer and Gaskell, 2013). Consequently, a training model has a systemic-constructivist approach, the assumption of which is based on the object of study, to provide the basis for a transdisciplinary approach that is relevant in the current complexity of the project as it is tightly related with the sustainability theme.

Master in Fashion Direction: Product Sustainability Management (PSM).

If design is intrinsically linked with problems facing the current state of the world (Fry, 2008), sustainability in fashion design is not a trend that will pass by, or something to be inspired by for designing garments, but is a way of designing as per positive future demands (Dickson M. et al., 2012) and a way to work towards the above-cited new skills agenda of the European Commission. In this sense, a training path on this topic must take on a common vision about the strategic importance of skills to promote employment, growth and competitiveness in the reference sector.

The goal of the PSM Master is to provide the knowledge, skills, and analysis tools necessary for the definition and recognition of a sustainable system of products/services/processes for fashion in the luxury sector. A systemic approach in which the true ability of the designer, today more than ever “is not the possession of a specific notional and/or formalized knowledge, but the possession of operational skills, aimed at developing solutions” (Fagnoni, 2018, p.20). From the perspective of the Master's training path, this is translated with the awareness and willingness to work on the objectives of the new skills agenda of the European Commission, with the following intervention.

- *Increase the quality and relevance of skills training.* The Master pursues this aim through the strategic involvement of companies, as an active testimony, to make the participants resilient and suitable in understanding the actual problems within companies as well as favoring the transition from declining sectors to new growing sectors.
 - *Make skills and qualifications more visible and comparable.* With the inclusion of the “Empowerment and Career Management” module, that has the aim to enhancing the educational experience in terms of orientation and first contact with the Italian world of work. Students are accompanied in the analysis of their skills through Learning Agility⁵ tests, and they are trained to define and better orient the search for internship offers; they also attend diverse interviews with human resources managers of fashion companies, and they are guided in the choice among internship offers.
- Paragraph: use this for the first paragraph in a section, or to continue after an extract.

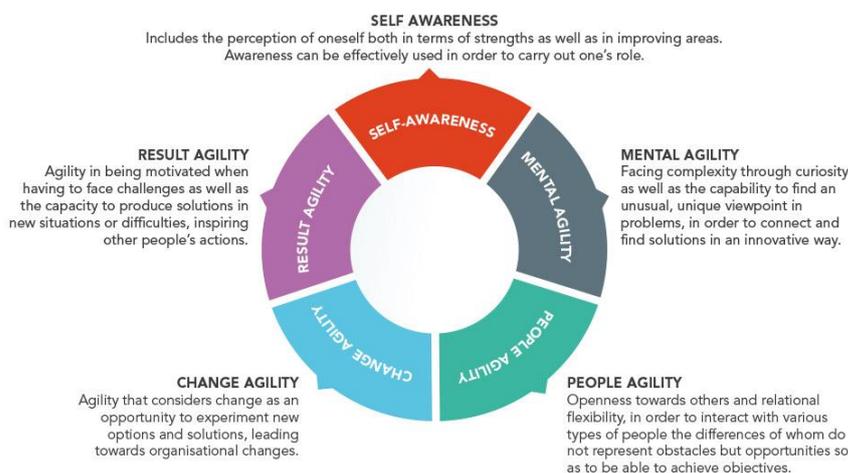


Fig 1. Learning Agility model, retrieved from <http://www.togetherhr.com/blog/what-does-an-e-learning-platform-supporting-learning-agility-consist-of-on-line-tools-for-flexible-learning-together/>.

- *Make Improve the analysis of skills needs and related information to improve career choices.* In agreement with Camera Nazionale della Moda Italiana, it was decided to implement the Career Day, usually provided by the Milano Fashion Institute as a day for introducing students to companies

through short generic interviews on their curriculum vitae, with a specific day of discussion on the figure of the Sustainable Manager. Each student of the Master in PSM had a personal interview with an account manager of CNMI. This activity was necessary, from the point of view of CNMI, to better understand how to present the new profiles within the professional world, with the aim of enhancing the characteristics of each student both from the point of view of the starting background and with respect to the specific knowledge acquired during the Master. From the students' point of view, this was useful to better focus on the path taken and on which knowledge and skills to highlight in relation to their career expectations in the sector. In general, therefore, adapt VET, so that those who attend vocational training can acquire the necessary skills related to the specific professional context, reconfirming and strengthening the central role of VET in lifelong learning.

In the development of the training plan, didactic modules were considered, independent from each other but linked to each other in terms of knowledge, so that there was a succession between the contents.

The contents of the Master⁶

The contents of the Master integrate different interdisciplinary themes for better understanding and managing the processes of fashion product development, with a specific focus on Sustainability for the Luxury sector, and marketing through the whole pipeline. The Master consists of 720 hours of classroom lectures and a final internship of at least 480 hours. The structure is composed of six learning blocs: warm up, quantitative & project tools, fashion pillars, fashion processes, curiosity, fashion practices, field projects, empowerment & internship. The objective is to accompany the student to the progressive knowledge of the industry and the key processes that characterize the professional profiles involved in the brand management. Lectures are organized into modules based on the presence of teachers from different areas that can transmit a complete picture of the structure and functioning mechanism of the industry. They include a part of theoretical framework and a large space devoted to exercises, with the aim of transferring methods, techniques and concrete working tools. Fashion Processes is structured with seven teaching units designed to manage “vertical” contents to recognize a sustainable product-service system for a luxury Italian market.

Sustainability For Fashion

The aim of the module is to clarify what is meant by sustainability in the various disciplinary areas and, above all, the different meanings that sustainability assumes in the fashion sector. Environmental, economic, social and productive sustainability are some of the insights that will be made during the module to better understand how Italian luxury fashion companies are involved.

Supply Chain Management & Responsible Innovation

The course allows to understand what social audits are and provides the fundamental tools for structuring sustainability reports in the fashion sector. During the lessons, the model of the Renewed Fashion Value Chain will be presented and the following drivers of change of responsible innovation will be explored: supply chain traceability and transparency, circularity, collaborative consumption. The most up-to-date technologies that are driving the shift towards the Industry 4.0 will be explored, such as the Blockchain for traceability and transparency of the supply chain.

Fibers, Materials & Accessories

The aim of the module is to investigate the issues related to materials, their generation within production chains, specifying, both upstream and downstream of the process, how the Italian textile-fashion-accessory companies operate from the point of view of sustainability. A specific focus is addressed on the chemical aspect of materials, finishes, dyes through direct testimonials from industry experts. Moreover, another aspect included is that concerning nanotechnologies applied to fabrics that transform their physical and mechanical characteristics.

Materials Innovation

The module addresses, through the direct testimony of business experts and not only, the issues of creating new materials for product and process sustainability. The module also includes a workshop where students have the opportunity to experiment hands-on to design and generate an innovative material.

CSR Communication

The issue of corporate social responsibility is today an element that has taken root within companies and organizations. A phenomenon in constant evolution also in the field of fashion.

The course explores the theoretical coordinates and the main actors of CSR in the fashion industry, with concrete examples of effective and less effective campaigns.

Retail Sustainability & Bio Architecture

The goal of this module is to show how sustainability can change the design scales and understand retail spaces, showrooms, until fully sustainable complex architectures. In addition, the module's purpose is to show the existing design cross-fertilization between the different design areas and how the fashion field can

affect the area of the architectural project and vice versa.

LCD (Lifecycle Design): Tools & Regulation

The purpose of the module is to provide all of the tools of analysis, calculation and regulations in legislation on sustainability in Italy. Through the connection with the LENS observatory / network at the Politecnico di Milano, the module shows the existing measuring tools (LCA, Life Cycle Assessment) for the assessment of the environmental impact risks and products life cycle. Students can understand how to integrate a design-driven approach, with a correct assessment of environmental impact, to generate outputs of product-service systems more appropriate for end users.

PRODUCT SUSTAINABILITY MANAGEMENT			1200h
COMMON COURSES		SPECIALIZED COURSES	
WARM UP 40h*	FASHION PILLARS 140h	FASHION PROCESSES 180h	FASHION PRACTICES 790h
Management, Economics, Quantitative Methods 20h	Fashion History 20h	Sustainability for Fashion 30h	Field Projects 278h
Sociology 20h	Italian Fashion System 20h	Supply Chain Management Sustainable Innovation 28h	Kick Off 6h
Design Projects 20h	Fashion Business Models 30h	Material Innovation 24h	Entrepreneurship & Start Up 24h
TOOLS 20h*	Project Management 20h	CRM Communication 28h	Empowerment & Career Management 32h
Quantitative Tools 20h	Creativity Management 20h	Retail Sustainability & Bio Architecture 20h	Internship 480h
Project Tools 20h	Fashion Marketing & Brand Management 30h	LCA (Lifecycle Assessment): Tools & Regulation 10h	Final Thesis 40h
	Research Methods & Trends 30h		CURIOSITY 30h
			Curiosity 30h



Director: Prof. Giovanni Maria Conti
1 year master
Intake: January
Lectures: January to May
Field Project: June to July
Internship: from September
University Credits: 60
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Fig 2. Scheme illustrating the educational model of the PSM Master. In black, common courses that deliver warm-up contents, technical tools and courses about the pillars of fashion through a design, management, and communication perspective. In red, the specializing courses with the different modules.

Since dealing with sustainability in the fashion sector concerns different domains of knowledge that are strongly articulated between each other, also the definition of the Faculty, made up of teachers, professionals and experts working in the Textile-Clothing, Fashion and Luxury sectors, has favored multidisciplinary. Furthermore, in agreement with Camera Nazionale della Moda Italiana, the overall purpose is to encourage the dialogue of students with the "outside world" of companies through a cycle of seminars held by managers and professionals in the production world, in order to provide an as real as possible photograph of the sector.

In a classroom where different points of view are privileged, as all the students have diverse backgrounds (more humanistic, or scientific, or technical), different previous studying and working

experiences, different ages and nationalities, design is a “reflexive praxis” (Schön, 1983) ‘able to blend practice and theory and to bridge arts and humanities with science and engineering disciplines’ (Bertola, Mortati and Vandi, 2020, p.112). In this context, therefore, it is possible to recreate and encourage the birth of transversal skills, favoring the conditions for the development of design skills and competencies typical of the teams that are working together inside companies.

Conclusions

Design as a discipline and practice that bridges art and science, humanities and technologies can gain unprecedented relevance within research and innovation processes, thus growing as a strategic function in companies and organizations (ibid., p.115). The challenge of creating a path like that of the Master in PSM lies precisely in the will to create a place of knowledge transfer and cross fertilization (Conti, 2021) of knowledge in which, taking up the initial concept of system sustainability, the discussion of the topics is coordinated and reported, as much as possible, to all the areas that the sustainability issue crosses. The pandemic has accelerated the process, already underway within the fashion world, whereby the consumers are no longer a passive recipient of the product that they are offered but become actors themselves, who participate in the first person through an active interaction, made possible thanks to social media. We are therefore witnessing a paradigm shift in fashion that concerns the transition from a product-centered sector to a complex model of service economy in which the physical product is one of the possible results and in which new business models, linked to the sharing economy, are modifying radically the consumption of the so-called "fashion" product.

In this sense, therefore, it becomes necessary a change in the educational model of fashion design, that needs to move from being solely focused on the product, and to become able to grasp and coordinate different multidisciplinary knowledge domains to allow professionals to imagine their interrelation with all the other functions and exploit the full potential of technological innovations. “Designers can enter into the diffuse field of design as moderator, bringing along their specific skills, being able to create “vision of the possible” (the ability to envision something that does not exist, but could exist) and make up strategies to fulfil goals (knowing which steps to take to turn probable vision onto actual solutions)” (Vezzoli and Manzini, 2008, p.49).

We also need to consider that we are living a moment where “the need for reskilling human resources during their job life is increasing, and universities need to better address this task by finding new ways to cooperate with companies in co-creating educational paths and new training on job experiences” (Bertola, Mortati and Vandi, 2020, p.116). In this sense, some elements were considered fundamental in the construction of the Master in PSM, such as:

- people are learning more and more in contexts beyond formal education: online, in the workplace, through professional courses, social activities or volunteering;
- the transition to a circular and low-carbon economy implies the creation of business models and professional profiles suitable for them;
- the digital transformation of the economy is redefining the ways in which people work, therefore it is necessary to consider "new" working methods that affect the types of skills needed and in which innovation becomes the key to success.

For example, with a view to circular economy, the workshop activity carried out within the Material Innovation module should be noted: in fact, through a practical activity of reworking and reusing food waste, guided by the expert teacher, the students were able to actually experiment and create “new materials”, not necessarily suitable for clothing but certainly usable in the fashion sector in general. It is in this sense that the Master in PSM also responds to the demands of the European Green Deal, in which investments in a more circular economy can help the EU reduce its dependence on external suppliers and increase its resilience as regards global procurement.



Fig 3. Presentation of the results of the workshop “Material Innovation”.

The developed educational model is therefore aimed to define the profile of a manager capable of dealing with the environmental aspects of the company both upstream and downstream of the process so that it can help to develop awareness of the need to operate with greater responsibility and attention to the surrounding environment.

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¹ For further information see <https://www.globalgoals.org/>

² European Commission. (2016). A new skills agenda for Europe: Working together to strengthen human capital, employability and competitiveness. Retrieved from: [https://ec.europa.eu/transparency/documents-register/detail?ref=COM\(2016\)381&lang=it](https://ec.europa.eu/transparency/documents-register/detail?ref=COM(2016)381&lang=it)

³ Communication from the Commission A Strong Social Europe for Just Transitions, COM(2020) 14 final.

⁴ Vocational education and training is to be understood as the education and training which aims to equip young people and adults, with knowledge, know-how, skills and/or competences required in particular occupations or more broadly on the labour market and may be provided in formal setting and in non-formal settings, at all levels of the European Qualifications Framework, including at tertiary level. For further information, especially in the Italian context, analyze, <https://www.cedefop.europa.eu/en/publications-and-resources/publications/4132>

⁵ "Learning Agility" is the ability and the bent to learn from one's own experience as well as that of others. It is the capacity to put teaching into practice so as to rapidly improve one's own performance. For further information see Hoff, D. and Warner Burke, W. (2003), Learning Agility: The Key to Leader Potential, Hogan Press.

⁶ All this information are available on the website, <https://www.milanofashioninstitute.com/en/masters/psm/>