

Education and Research
**IO2 - FRAMEWORK
DOCUMENT FOR
DESIGN-LED
SUSTAINABILITY
EDUCATION**



**fashion
SEEDS**

FASHION SOCIÉTAL,
ECONOMIC & ENVIRONMENTAL
DESIGN-LED SUSTAINABILITY

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Fashion SEEDS

Fashion Societal, Economic & Environmental Design-led Sustainability

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PROJECT CO-ORDINATOR

University of the Arts London, London College of Fashion, London, United Kingdom

Dilya Williams, Professor and Director of Centre for Sustainable Fashion
Nina Stevenson, Education for Sustainability Leader, Centre for Sustainable Fashion
Natasha Bonnelame, Digital Learning Producer
Egle Juospaityte, Project Manager

PROJECT MEMBERS

Politecnico di Milano, Dipartimento di Design, Milan, Italy

Federica Vacca, Assistant Professor
Chiara Colombi, Associate Professor
Erminia D'Itria, PhD Candidate
Eleonora Coira, Research Fellow

Estonian Academy of Arts, Tallinn, Estonia

Reet Aus, Senior Researcher
Piret Pupart, Professor, Head of Department
Julia Valle-Noronha, Professor
Harri Moora, Consultant and Teaching Staff
Triin Amur, Lecturer

Design Skolen Kolding-DK, Kolding, Denmark

Vibeke Riisberg, Associate Professor
Ulla Ræbild, Associate Professor
Karen Marie Hasling, Associate Professor
Louise Ravnløkke, Assistant Professor

ADVISORY BOARD

Anna Detheridge, Connecting Culture, Milan, Italy
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Silke Lieser, Gegenpol, Trier, Germany

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AUTHORS

Williams, D., Pupart, P., Valle-Noronha, J., Crew, J.,
Stevenson, N., D'Itria, E., Vacca, F., Hasling, K.M, Riisberg,
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Fashion SEEDS

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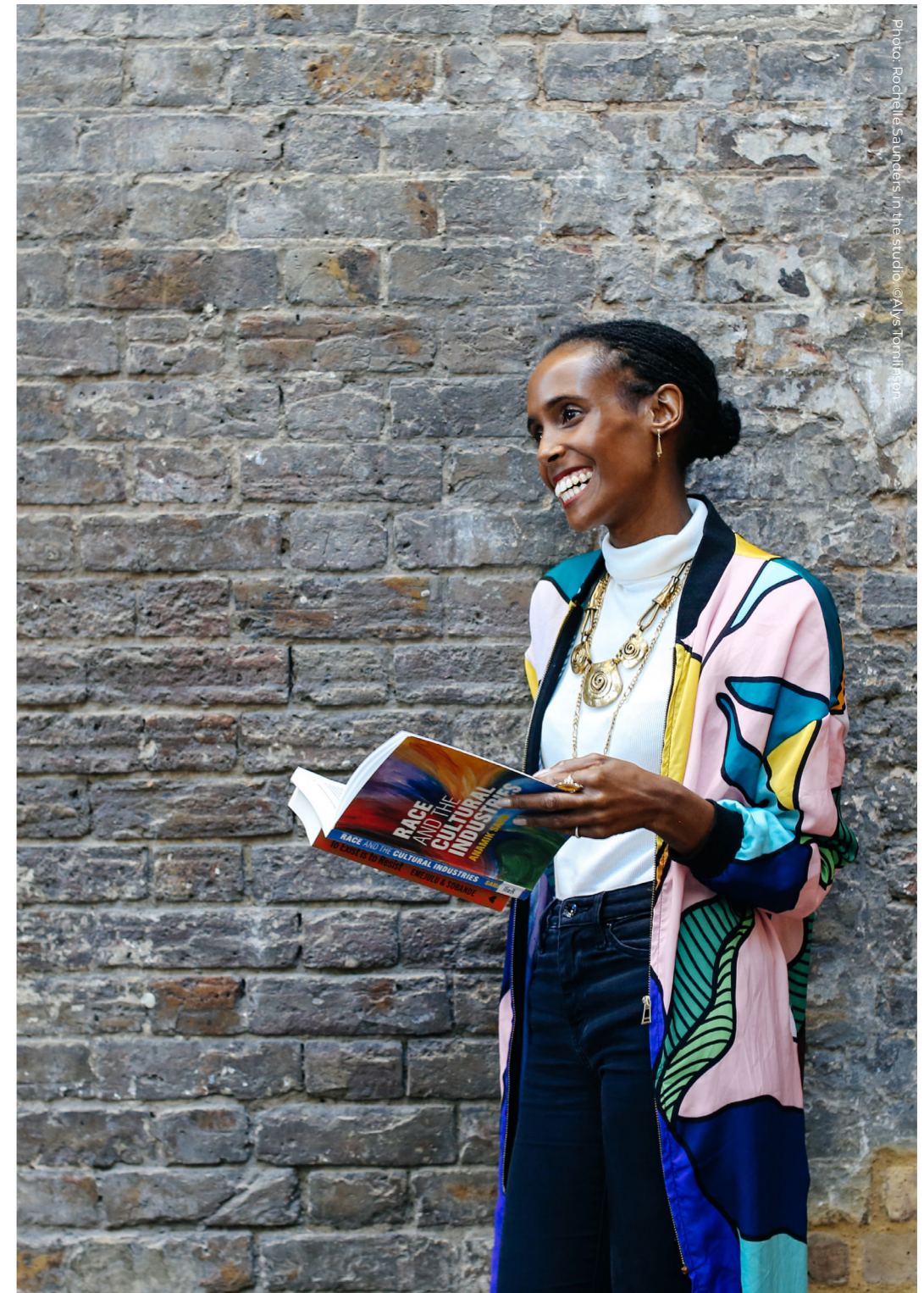
INTRODUCTION

Designing a
Framework
for Education
in Fashion
Sustainability

This report outlines a framework for integrating sustainability into fashion design education, by connecting philosophy, theory, and practice. It is based on the project team's real-life experiences, tutors in partner universities and the project's advisory board members, drawing on research gathered from tutors in more than 70 universities, along with micro to large-scale industry practitioners.

The framework outlines fashion design-led sustainability as a subject area in teaching and learning in higher education institutions (HEIs). It acts as the skeleton of the FashionSEEDS platform and a pre-cursor to its content development. The framework outline and content has been tested, implemented and evaluated through a series of face-to-face and virtual workshops, education conferences and design events. The FashionSEEDS framework seeks to embed sustainability into design education and sector-specific technical, design and innovation skills development. It responds to the emerging and unmet needs of the fashion, textile and cultural sectors, within a socio-ecological and socio-economic context.

The framework uses a systems-thinking lens, viewing the fashion education system as a spectrum for change. The findings from the Benchmarking Report (FashionSEEDS, 2019) and an ongoing co-inquiry by the partnership members has led to the creation of new knowledge in fashion design education for sustainability teaching and learning, formatted for application across a range of fashion education experiences. This includes tutor development of reflective practice, pedagogic development, assessment framing, course content creation, course development and recognition of capabilities, skills and competencies. By sharing these findings and resources, FashionSEEDS can enhance the current offer of education in fashion to a wide audience of tutors and learners, boosting the employability of graduates who can contribute to societal needs in and beyond EU countries, contributing to climate and social justice within countries and beyond borders. The framework builds an inclusive and connected system for fashion related higher education, making a distinctive contribution to the realising of the United Nations Sustainable Development Goal 4: to ensure inclusive and equitable, quality education and promote lifelong learning opportunities for all. The learning design and content of the platform responds to the United Nations Sustainable Development Goal 12: to ensure sustainable production and consumption. Drawing on insights and co-inquiry with stakeholders, its methodologies and routes to application in product, service and systems design offers practical teaching and learning resources, and guides for subject and personal development that respond to a range of identified user needs.



Designing a Framework for Education in Fashion Sustainability

Despite myriad efforts to develop sustainability within fashion education and industry (Parker, 2009; Fletcher and Grose, 2013; Williams, 2016), the cross-cultural and cross-geographic dimension of the field requires a more in-depth and systemic response. As past experiments show (Maldini et al., 2019) the impact of changing only individual parameters of the education cycle is not enough to create the change needed to develop transformation in practice. The Benchmarking Report (Williams et al., 2019) points to a lack of fashion programmes and schools with a clear focus on sustainability subjects, despite the widespread agreement that a new generation of designers who fully embrace fashion design for sustainability is needed. Our findings and experience show that sustainability approaches to education are restricted to didactic activities in theoretical and practical dimensions. In this way, learners are guided to deal with the topic as an important aspect of their design action or as an investigation theme, rather than viewing fashion design through an ecological and equity-based lens.

The findings from the Benchmarking Report have provided vital information on the present needs and challenges faced by HEIs and companies in advancing sustainability in action. This is due to a gap in systemic thinking when considering the question:

How have HEIs developed their curriculum for sustainability?

Issues of privacy and content disclosure have made current curricula across HEIs difficult to access, and the project is limited in using English as the common language across the team. However, the openness of project partners to sharing their own practice through case studies, detailing how they address sustainability, alongside case studies from research undertaken with 73 other HEIs, has offered a rare insight into what, why and how fashion is currently taught in a range of locations. The Partners' Reports (see template in Appendix 1) include an overview of institutional policies on sustainability in organisational and educational terms, their structure, pedagogic and design approaches used to teach sustainability, and examples of projects and programmes that directly explore sustainability.

The research findings indicate other gaps that the framework seeks to fill:

- The gap between industry and academic perceptions of sustainability
- A lack of practice-based learning for tutors as well as for those they teach
- Opportunities for lifelong learning beyond traditional BA and MA programmes
- Creating ground for more radical transformational changes in and through education.

The framework seeks to fill these gaps through a heuristic, educational offering that can respond to societal needs by aiding tutors to initiate sustainability-oriented curricula within higher educational institutions (HEIs). The framework proposed in this report should not be viewed as a fixed and one-dimensional proposal, but as an outline in constant flux, affected by and affecting the contexts of each institution and the wider systems within which fashion takes place, and the social, cultural and economic backdrop of different regions.



Photo: Verity Weller working in the studio. ©Alys Tomlinson

Framework Structure

This framework document articulates the groundwork for the development of the FashionSEEDS platform, its content and user design. It provides an overview of higher educational structures, reviewing fashion education for sustainability literature and practice to outline approaches leading to transformational change in the fashion education system. The primary audience of the framework is those who teach and continue to learn about fashion in formal HEI settings and beyond them, in industry, community, personal world settings.

The first chapter offers insights into institutional parameters and structures, seeking to identify the relevance of institutional ethos in supporting the development of sustainability actions. The second chapter outlines the four pillars of sustainability upon which the document and wider project is based; the third chapter overviews the evolution of sustainability discourse and how this has been adopted and developed within the field of fashion design, to contextualise the project's approach to teaching and course development. The fourth chapter presents an analysis of findings from research into the needs of fashion tutors in relation to their roles, both in terms of developing teaching content and evolving their practice. Chapter five contextualises education in fashion design for sustainability (FDfS) in relation to wider education for sustainable development initiatives. Chapter six outlines the pedagogic approaches of FashionSEEDS that aim to enable deep learning experiences. Whilst developed out of fashion and sustainability approaches to, and philosophies of, teaching, these pedagogic approaches are applicable across disciplines in facilitating research-informed and research-informing practice. Chapter seven outlines an approach to assessment that uses Scales of Transformation as a framework to advance systemic changes in the fashion education system through recognising change within and across transformational levels. Each level is of value in the teaching and learning repertoire, whilst each is insufficient, or inaccessible by itself. Chapter eight offers an introduction to a 'capabilities approach' to teaching and learning, expanding the remit of the tutor and the learner, with a case study that outlines taxonomies of learning and how they have been applied at one of the partner institutions. Chapter nine considers ways in which a mutually support approach to the development of teaching practice can support the tutor as learner, through a process of sharing, reflection and action using peer-to-peer and co-inquiry methodologies.

The document acts as a framing for the FashionSEEDS platform, it has guided the project's development of a heuristic model of fashion design for sustainability education, informed by the extended co-inquiry between

tutors and researchers in four distinctive geographical and cultural contexts and longitudinal study undertaken, drawing on a wide range of participants from around the world. It is hoped that this groundwork can inform why, what, how and with whom tutors teach and learn fashion that can contribute to an ability for human and more than human life to flourish. We recognise the limits of this study and continue to seek sources of knowledge and wisdom that are beyond the written word, Western hemisphere belief systems and the canon of fashion and sustainability design.



Photo: Student Pama Mohamed in the studio. ©Alys Tomlinson

CHAPTER 1.

Description of
Higher Education
Institutional
Structures

This chapter explores how fashion education is approached by institutions, focusing on three levels: institutions, programmes and course units. The first section discusses how institutional structure can support a transition to sustainability curricula. The second section analyses the data from the perspective of the programmes, and the third from the perspective of course unit content development. Due to variation in terminology referring to various parts of an institutional structure, FashionSEEDS makes use of the nomenclature used in the Bologna agreement, where programme is defined as degree-level studies, such as a 'Bachelor in Fashion Design' or a 'Masters in Sustainable Fashion'. It is composed of course units and leads to an award, described as a diploma. Programmes are analysed according to the following characteristics: level, duration, specialism, sustainability pillars integration (based on project descriptors), future strategies, institutional teaching approach, pedagogic approaches used to embed sustainability (based on project descriptors) and formats used. Course unit is defined as a set of classes on a specific subject, with a pre-determined syllabus, offered by a HEI and analysed using the same criteria.

Addressing Sustainability at an Institutional Level

Sustainability requires universities to rethink their mission and restructure their curricula, research programmes and other activities (Sterling and Maxey, 2013). To become a sustainability-led university, it is vital that sustainability aspects are integrated into all levels of HEI core activities, such as institutional policy and arrangements, teaching, and research, as well as stakeholder engagement (Tilbury, 2011; Bawden, 2004). There is a critical role for leadership and commitment at the institutional level (fig.1) that acknowledges and supports change across departments, programmes and processes.

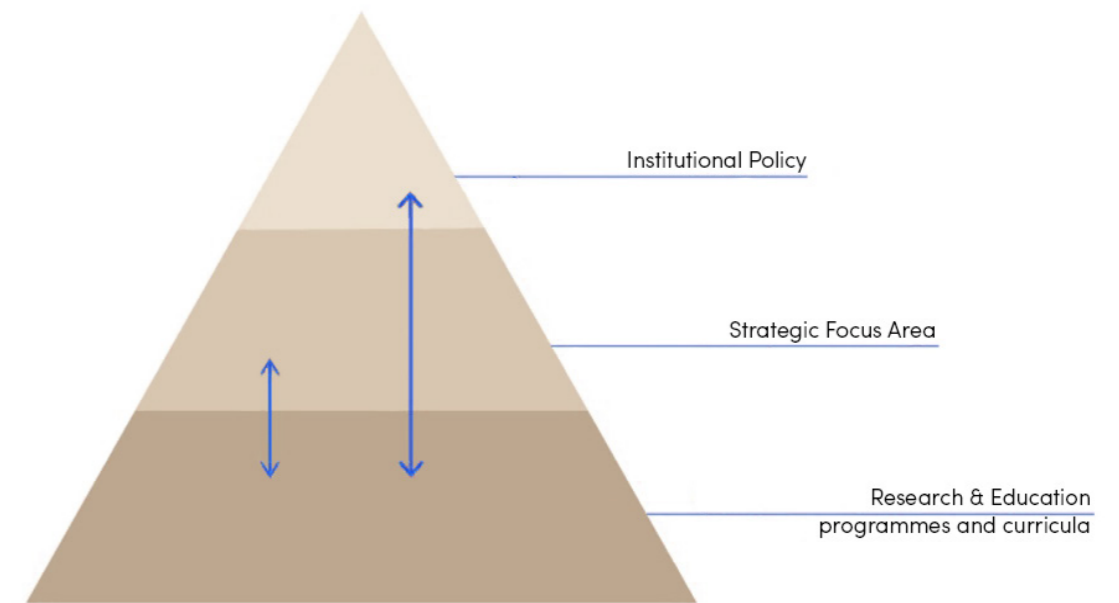


Figure 1. Illustration of the dynamics for implementing sustainability from an institutional perspective.

It is important to recognise that whole systems change involves a dynamic cross-directional approach, where changes take place within and across areas of the fashion education system, in ways that are non-hierarchical and include top down, bottom up and middle out (fig.2).

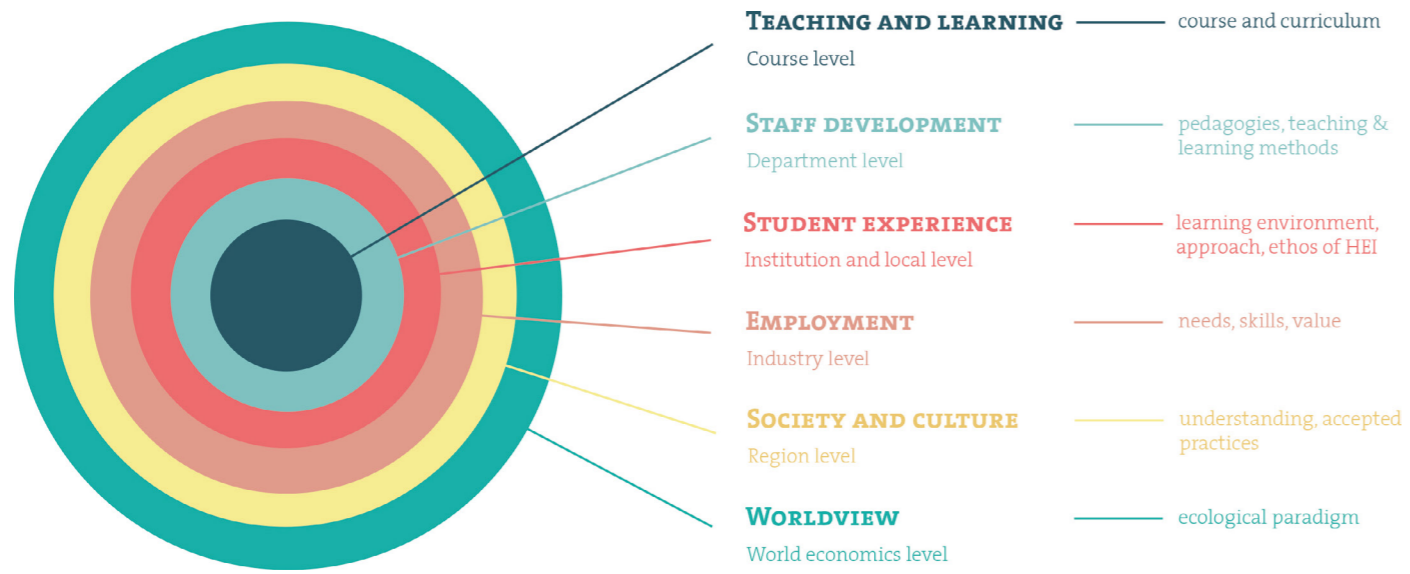


Figure 2. The Fashion Education system (Williams and Stevenson, 2012)



Photo: Designskolen Kolding

A systemic implementation of sustainability values into all programmes can be more easily achieved when committed to via an institutional ethos and policy. This relates to the vision, mission, objectives, strategic focus areas and development plan of a university. Transforming all levels of a university entails fostering, encouraging and recognising a sustainability culture and providing a basis for systemically led and systematically applied (i.e. not in parts) sustainability education, outreach, and collaboration. The institutionalisation of the principle of sustainability is only achieved when accepted and integrated into university governance. Well-designed research programmes and education curricula are expected to realise university ambitions and the related strategic targets of HEIs, whilst individuals must be supported in linking academic depth with strategic interest (Tilbury, 2011).

To illustrate approaches to the implementation of education in fashion design for sustainability (FDfS), FashionSEEDS project members produced an extensive study on their institutional structures and course units in relation to sustainability. Holding significantly different profiles regarding size, number of students, programmes offered, institutional culture, geographic, cultural and political contexts, Partners' Reports offer rich, firsthand material, which can be read alongside the case studies and findings from research into ethos and practice across an extensive number of HEIs. From the project research data, we found that bottom up and middle out approaches can stimulate top-down change, and that change happens through participation across and within levels in the fashion education system. Thus, the FashionSEEDS framework seeks to support and guide tutor-led change-making through its content, and to create conditions for this to take place and be recognised through its layout. It also seeks to create connections between fashion education system players, within and beyond the institution, by highlighting the elements involved in transforming HEIs in the context of societal and ecological needs.

Addressing Sustainability at Programme and Course Unit Levels

This section introduces the spectrum of programme levels, course unit levels and the differences between formal and informal learning in current programmes. It presents an analysis of practice in fashion design for sustainability across the European education system. Data collected for the FashionSEEDS Benchmarking Report, which integrates desk-based research with surveys and semi-structured interviews, was supplemented through a further phase of desk-research to fill gaps and deepen understanding of the findings from the mapped institutions.

The results span 87 cases, identified as follows:

- 81 are traditional programmes (TP) offered by 55 HEIs mapped in 39 European countries. Of these programmes, 46 are offered at BA level and 33 at MA level.
- Three are advanced programmes (AP) offered by HEIs (1), or an association of social and cultural promotion (2). This typology of programmes responds to the need to deepen a specific topic that is sustainability related, as well as serving as a refresher or requalification programme for those already employed.
- Three are online programmes (OP) based on sustainability, which are provided by HEIs (1) or independent/private organisations, (2), which work in the field of fashion design for sustainability. These three OPs are additional cases which have been investigated in response to the current rise of new learning frameworks relating to open education and large-scale distance learning (Inamorato dos Santos, 2016). These phenomena are enabling a novel approach to pedagogy, where educators and learners understand how to create, shape and evolve knowledge together, deepening their skills and understanding as they go (Cape Town Open Education Declaration, 2007).

Spectrum of programme levels

The analysis of HEIs' programmes focusing on sustainability is mapped according to the following parameters: level, duration, specialism and FashionSEEDS pillars of sustainability, future strategies, institution teaching approach and pedagogic approaches used to embed sustainability in courses, and formats.

Programme level

The programme level at which sustainability is taught in Europe has been examined, considering traditional academic levels, defined by the cycle progression from Bachelor's to Master's degree, which is the European standard set by the Bologna Process. This includes the advanced training programmes which provide graduates, or professionals, with further levels of education about a specific topic, and the analysis of new educational phenomena relating to the application of modern technologies to online courses, which are delivered at various levels (undergraduate, graduate, non-credit, etc.).

The traditional programmes are offered by HEIs located in the European continent, and whilst not all of them belong to the European Union, they all adhere to the Bologna Process. The analysis shows that, among those mapped, 27 out of 55 HEIs offer the possibility of continuing the cycle of study by providing programmes at both 1st and 2nd cycle levels.

The advanced programmes (3) do not follow a common regulation; each institution can manage its own structure. These programmes fall into the category of postgraduate study, for which candidates must hold a degree level 1 or 2. The programme level is established according to topics covered and the degree of specificity with which they are addressed. Students must attend a certain number of lessons/hours to be eligible for a diploma.

In the online programmes (3), regulation is not defined, each institution manages its own set of levels. This is because these programmes aim to provide learning resources and activities to any kind of learner, wherever they are and whenever they need them (Caar-Chelmann and Duchastel, 2000).

Programme duration

HEI programmes follow the Bologna Process, according to which there is a direct proportion between student working hours and credits (using the European Credit Transfer System, or ECTS). One credit is defined as 25 hours of both study time and time spent in the classroom or laboratory. BA is the first cycle required by the Bologna Process; its duration is established based on the number of credits requested (180-240 ECTS). MA is the second cycle required by the Bologna Process and, for its conclusion, 60-120 ECTS are needed. However, the university can also arrange the time according to other factors such as internal regulations, the distribution of the credits within the different academic years, or the students' path choices (full/part-time).

Bachelor's: one year (2%), one and a half years (6%), two years (2%), three years (70%), three and a half years (6%), or four years (14%)

Master's degree: one year (24%), one and a half years (6%), or two years (70%)

Advanced and online programmes are characterised by short periods, but they differ in structure and output. The AP are structured to build skills and foster the participants' personal and professional development through the acquisition of

specific competencies and abilities. They concentrate on a limited time, specified content and end within a datum term.

Advanced programmes: one month (34%); three months (33%); five months (33%)

For those enrolled in OP, length varies as learners do not have personal meetings with the tutor or peers. All content, learning activities and assessments are provided online, offering flexibility, in synchronous or asynchronous formats. (Kurt, 2018). The analysis shows that the ratio between frontal teaching and the required off-line workload is unbalanced. The time constraints imposed for dissemination are not reflected in the quantity of material offered (slides, blogs, videos), and the subsequent workload required.

Online programmes: one month (34%); one and a half months (33%); two months (33%)

Area of specialism – This research analysis comprises profiles resulting from the specifically disciplinary educational dimension of design, which is, according to Celaschi (2008), a mediator between four different systems of knowledge: humanities, technology, art, and economics. Starting from this interpretation, here are the five areas of specialism in which the mapped HEIs collocated themselves.

Bachelor's degree: Design (51%); Economics (21%); Humanities (14%); Fine Arts (6%); Technology (8%)

Master's degree: Design (45%); Economics (22%); Humanities (15%); Fine Arts (6%); Technology (12%)

Advanced programmes: Design (34%); Economics (34%); Humanities (16%); Fine Arts (16%); Technology (0%)

Online programmes: Design (40%); Economics (60%); Humanities (0%); Fine Arts (0%); Technology (0%)

The data shows how the courses' profiles are located around design and economics, which emerge as the main specialty among the mapped institutions. This is coherent with the attitude of institutions that orient their activities to more economic-driven directions, with a strong belief in the power of this area as well as design-driven opportunities which are considered fundamental in developing new sustainable value propositions (Muller, 2012).

Sustainability is not just another issue to be added-on, separately, to an existing curriculum (Sterling, 2004), but to be integrated to offer a different view, allowing HEIs to lead the transition to a sustainable paradigm through knowledge, teaching, and learning (Williams et al., 2009).

The analysis of the data identified five different dimensions which are enabling sustainability integration in HEIs' courses:

- **Pedagogical approaches**, which are the attitudes to developing student's knowledge, abilities and values, and the attitudes needed to contribute to learn sustainability development (Segalàs et al., 2010);
- **Curriculum topics**, that can help prepare for the learning that will be needed over time by individuals and institutions, both as a resource for living and further learning (Scott, 2002);
- **Student experiences**, which aim to improve systems-thinking skills and cognitive understanding of sustainability (Segalàs et al., 2010);
- **Interdisciplinary partnerships**, which are required to structure sustainability issues in such a way as to confer a more effective response and wider comprehension of the topic (Fernandes and Rauen, 2016);
- **Institutional strategy and/or values**, that are adjusting educational missions and visions to embed sustainability into their business and educational processes (Stephens, Graham, 2010).

Bachelor's degree: Pedagogical approaches (20%); Curriculum topics (21%); Student experiences (25%); Interdisciplinary partnerships (18%); Institutional strategy and/or values (16%)

Master's degree: Pedagogical approaches (18%); Curriculum topics (24%); Student experiences (26%); Interdisciplinary partnerships (18%); Institutional strategy and/or values (15%)

Advanced programmes: Pedagogical approaches (25%); Curriculum topics (25%); Student experiences (25%); Interdisciplinary partnerships (25%); Institutional strategy and/or values (0%)

Online programmes: Pedagogical approaches (25%); Curriculum topics (25%); Student experiences (50%); Interdisciplinary partnerships; Institutional strategy

and/or values (0%)

The traditional programmes have similar profiles, as well as the APs, and the results show how they are embedding sustainability using a similar strategy, which balances the use of all five dimensions to achieve this integration. Whereas the OPs demonstrate a specific focus on the student experience, as students need to take them where they are (often already engaged in the workforce) and work with them in ways that take best advantage of their available time, energies and interests (Chellman and Duchastel, 2000).

The Four Pillars (environment, economics, culture and society, or EECS) integration – HEIs are establishing relevant links between the sustainability pillars and the way they run their institutions and provide learning experiences. Paraphrasing Gilbert (2004), and a vision of how the four pillars should be used to plan HEIs' curricula, education for sustainability combines the wise use of natural resources with the equally important concerns of social, economic and cultural sustainability.

Bachelor's degree: environmental (34%); economics (8%); society (22%); culture (36%)

Master's degree: environmental (47%); economics (15%); society (33%); culture (19%)

Advanced programmes: environmental (20%); economics (40%); society (20%); culture (20%)

Online programmes: environmental (50%); economics (25%); society (25%); culture (0%)

Analysis of the data shows a tendency on the part of traditional programmes to focus on issues intricately linked to the pillar of the environment, as well as social issues and culture. The APs pay particular attention to the economic aspect while the OPs focus on the environment.

Future strategy – over recent years, many universities have undertaken activities for implementing education for sustainability with limited success; there is a real need to embed change and this requires a transformed educational paradigm (Sterling, 2001). To achieve this transformation, the data shows specific strategies that the mapped institutions are carrying out to implement sustainability integration and development.



Photo: Irene Cerrinara sketching in the studio. ©Alys Tomlinson

Five curriculum content themes emerge from the research:

- **Questioning of consumption and growth**, in response to the economic phenomena of globalisation and consumerism, and their increasing pressure on natural resources, these strategies aim to create improvement by reducing the negative consequences (Herbert, et al., 2015).
- **Amplifying public understanding of sustainability**, through events that are engaging the public in social movements to more purposefully engage with and exert influence on public policies regarding important issues related to sustainability (Pozzebon and Mailhot, 2012).
- **Design for socio-cultural change**, which considers reframing ideas, shaping alternative courses of action, and generating a new discourse and action around sustainable values (Thatchenkery, et al., 2009).
- **Role of design research in engaging researchers in being change agents** in supporting a transition towards a sustainable system (Wittmayer and Schapke, 2014).
- **Exchange with business and politics**, adopting a long-term perspective of collaboration, looking ahead to a multi-year perspective with clear involvement from other players (Orecchini, et al., 2012).

The research reports a similarity in the themes that the different programmes are planning or using to support sustainability. The institutions are predominantly focusing on the questioning of consumption and growth and amplifying public understanding of sustainability.

Bachelor's degree programmes are applying these themes into strategies in the following order: Questioning of consumption and growth (34/46); Amplifying public understanding of sustainability (7/46); Design for socio-cultural change (3/46); Role of design research (2/46); Exchange with business and politics (0/46)

Master's degree programmes are applying themes into strategies as follows: Questioning of consumption and growth (26/33); Amplifying public understanding of sustainability (5/33); Design for socio-cultural change (1/33); Role of design research (1/33); Exchange with business and politics (0/33)

Advanced programmes are planning themes into strategies in this order: Questioning of consumption and growth (2/3); Amplifying public understanding

of sustainability (1/3); Design for socio-cultural change (0/3); Role of design research (0/3); Exchange with business and politics (0/3)

Online programmes are planning their future as follows: Questioning of consumption and growth (2/3); Amplifying public understanding of sustainability (1/3); Design for socio-cultural change (0/3); Role of design research (0/3); Exchange with business and politics (0/3)

Institution teaching approach – HEIs play a strategic role in shaping the future of world society in terms of sustainability through their teaching, which contributes to generating new knowledge, developing appropriate competencies, and raising sustainability awareness (Rieckmann, 2012). The analysis of mapped institutions shows how the higher education sector is approaching the teaching of sustainability in its courses.

The analysis of the data indicates two main approaches which are being adopted by the institutions in their educational activities: one is focused on the theoretical side of teaching, as some universities have the perception that students learn theory and must leave the campus to experience the practice; and the other is based on a practical hands-on approach, which is supported by scholars such as Moore (2005), Too, and Bajracharya (2015), as they understand learning as the application of knowledge in practice.

The analysis of the data shows that these approaches are applied by all the types of courses studied, but there is a tendency in traditional courses to prefer a practical approach, as well as for the APs. The OPs, which are characterised by a disseminator nature, and are long-distance, tend to use a theoretical approach.

Bachelor's degree: theoretical side of teaching (16%), practical hands-on assignments (48%); both (34%)

Master's degree: theoretical side of teaching (26%), practical hands-on assignments (42%); both (32%)

Advanced programmes: theoretical side of teaching (33%), practical hands-on assignments (67%); both (0%)

Online programmes: theoretical side of teaching (67%), practical hands-on assignments (0%); both (33%)

Pedagogical approaches used to embed sustainability in courses

The emerging academic field of sustainability is addressing its challenges by focusing on how courses are delivered, through its pedagogical approaches. The study decided to take into review the model proposed by the Centre for Sustainable Fashion (Williams, 2019) which defines seven pedagogies, referencing UN Economic and Social Council (2011) and Sterling (2001, further explored in chapter six.

- **Futures thinking**, a method for informed reflection on short and long-term feedback loops between ideas and actions;
- **Creative and critical thinking**, which offers a deep analysis and challenge of traditional and accepted modes of practice through creation of new alternative practices;
- **Participation and participatory learning**, which is a collaborative working approach in breaking through traditional hierarchies in relationships;
- **Systemic thinking**, which involves the understanding of interconnections and holistic approaches;
- **Interdisciplinarity**, which offers ways to work between fields of study and combines learning across different courses and disciplines;
- **Informed decision-making**, which bases decisions on verified data and employs analytical skills informed by expert knowledge;
- **Place-based learning**, which considers how location (physical, cultural etc.) or experience is of direct influence on learning, including experiential learning.

The data shows that institutions prefer applying in their traditional courses a pedagogical approach which is focused on future and creative/critical thinking; APs and OPs focus their courses primarily on creative and critical thinking leaving other segments quite open for productive development.

Bachelor's degree: Futures thinking (32/46), Creative and critical thinking (12/46), Participation & participatory learning (1/46), Interdisciplinarity (1/46), Systemic thinking (0/46), Informed decision-making (0/46), Place-based learning (0/46)

Master's degree: Futures thinking (21/33), Creative and critical thinking (11/33), Participation & participatory learning (1/33), Systemic thinking (0/33),

Interdisciplinarity (0/33), Informed decision-making (0/33), Place-based learning (0/33)

Advanced courses: Creative and critical thinking (2/3), Futures thinking (1/3), Participation & participatory learning (0/3), Systemic thinking (0/3), Interdisciplinarity (0/3), Informed decision-making (0/3), Place-based learning (0/3)

Online courses: Creative and critical thinking (2/3), Futures thinking (1/3), Participation & participatory learning (0/4), Systemic thinking (0/4), Interdisciplinarity (0/3), Informed decision-making (0/3), Place-based learning (0/3)

Pedagogic formats – Educating in sustainability can be challenging, due to the complex nature of the topic, and many scholars suggest that there should be specific pedagogical formats to teach sustainability at higher education levels (Christie, et al., 2015).

The research identified specific teaching formats for education in sustainability according to the mapped institutions' practices. Workshops, which consist of both discussions or practical works on a particular subject, in which a group of people share their knowledge or experience (O'Neill, et al., 2015); Studio, a format for teaching that can be used to replace the standard lecture approach focusing on problem/project work and experimentation in a hands-on studio environment (Carbone, et al., 2016); Conferences, events, which can last a few days, where there are groups of talks on a particular subject experience (O'Neill, et al., 2015); Meeting, this format consists of a planned occasion where people come together to discuss a specific question or theme (Jay, 2009); Hackathon, a competitive event where groups of people work together on software or hardware projects, its goal is creating a functioning product by the end of the event (Topi and Tucker, 2014); Study groups, in this format groups of people meet to study a particular subject; and Lectures, these are the most common format and consist of a formal talk on a specific subject given to a group of students (O'Neill, et al., 2015).

From the data, it emerged that BA, MA, and AP courses primarily use the Workshop as the pedagogic format to teach sustainability. This format is coherent with these institutions' pedagogical approaches, which required a process to conceptualise, apply, analyse, and synthesise the learned information (Downs, 1993) actively and skillfully.

The OPs, according to their long-distance and solitary structure, adopt lectures.

Bachelor's degree: Workshop (36/46), Lectures (3/46), Conferences (3/46), Meeting (1/46), Study groups (1/46), Hackathon (0/46)

Master's degree: Workshop (25/33), Conferences (3/33), Lectures (2/33), Hackathon (1/33), Study groups (1/33), Studio (1/33), Meeting (0/33)

Advanced courses: Workshop (3/3)

Online courses: Lectures (3/3)

Course Units

This section examines the course unit levels at which sustainability is taught in Europe. Building on the analysis carried out initially, it was necessary to further understand how the topic of sustainability is addressed in individual course units. To achieve this, it was necessary to start a new phase of desk research. Starting from the programmes analysed, the new research focused deeper into the following course units' aspects: level, duration, type of credits, and pillars integration.

The research identifies 111 course units:

- 79 are offered in traditional programmes
- 15 are offered in advanced programmes
- 17 are offered in online programmes

The research takes into consideration traditional course units based on the Bologna Process settings, which are developed at BA, MA level and the APs, as well as those defined according to new educational paradigms, the OPs. Traditional courses are divided into training units designed according to the workload deemed necessary to achieve the learning outcomes, and the necessary credits, per academic year.

These course units are positively characterised by the possibility of immediate feedback from the tutors, familiarity between instructors and students, and the possibility of cultivating a social community. Issues relate to their vocation

as instructor-centred, the constraints of time and place, and the highest cost (Zhang, et al., 2004).

The research identifies 42 course units offered at BA level, and 39 at MA level.

Advanced programme units are distinguished by not having specific hierarchies between levels. They are postgraduate courses which means that candidates need to have a BA degree, at least.

Online programme units are characterised by a more flexible structure and not usually directly linked to the credit system. These units' features are learner-centred and are often self-paced, with time and location flexibility, potentially availability to a global audience, sometimes with unlimited access, and the archival capability for knowledge reuse and sharing.

Unit Duration - Each training unit is defined according to the learning outcomes, the strategies and the related profit verification criteria. In the traditional courses, and APs, these characteristics determine the units' number of credits, ECTS, assigned and their duration (EHEA, 2015). The ECTS system is based on the convention that 60 credits measure the workload of a full-time student over an academic year, 25 hours of class corresponds to 1 credit. The OPs' units, which do not relate to the Bologna Process, are not regulated by the credits system.

From the data, it emerged that the traditional courses' duration is in accordance with the didactic calendar respecting the alternation of lessons and exam sessions.

Bachelor's: three months (10%); four months (5%); five months (12%); six months (73%)

Master's degree: one week (2%), six weeks (16%), one month (2%); three months (13%); five months (13%); six months (54%)

The APs are shorter due to their nature of concentrating the didactic activity on a specific focus. This is because, often, these types of course units are aimed at users who are already in the world of work who need to deepen certain knowledge.

Advanced programmes: two days (40%), three days (20%); one week (27%); four months (13%)



Photo: Designskolen Kolding

The OPs' duration is characterised by short times which, however, can often be extended as the students can access the teaching material remotely (on/offline) at any time, even after completing the unit. Moreover, the presence of tools such as blogs offers users the opportunity to stay connected.

Online programmes: one week (94%); five months (6%)

Course unit type of credits – The Bologna Process' aim is to create a single coherent higher education system across Europe. One of its outputs is the European Credit Transfer System (ECTS) which certifies the mutual recognition of qualifications and learning periods abroad. This system is student-centred and based on the workload required to achieve the objectives of a programme in terms of learning outcomes and skills to be acquired. It is a tool to facilitate mobility and academic recognition that allows universities to organise and review their study programmes (EHEA, 2015).

From the research, it emerged that all the mapped institutions use this system. Only one of the UK regional cases is using a different type of credits. When academic credits awarded by this institution are to be converted to ECTS (and vice-versa), this is based on one credit being equivalent to 0.5 ECTS.

Pillars integration (GMEECS) – The globally interconnected nature of business, politics, education and social discourse, with associated instabilities, is forcing academic institutions to engage in the environment, economy, culture, and society issues (UNESCO, 2015). On this basis, the data shows a trend on the part of the mapped institutions to integrate elements of the four pillars (EECS).

The collected data shows that HEIs are starting to integrate as well as delineate the four pillars, in their units. General (G) summarises this tendency of many institutions to perceive sustainability in an integrated and holistic manner when approaching the pillars (Leicht, et al., 2018). The data identifies materials (M) as a driver in building sustainable development (Ashby, 2016).

Bachelor's degree: environmental (16%); economics (12%); society (4%); culture (6%); general (42%); material (20%)

Master's degree: environmental (10%); economics (6%); society (8%); culture (6%); general (40%); material (30%)

Advanced programmes: environmental (10%); economics (22%); society (5%); culture (10%); general (48%); material (5%)

Online programmes: environmental (14%); economics (20%); society (10%); culture (0%); general (52%); material (4%)

Application of the findings into the framework

This chapter of our work demonstrates an understanding of the structures, programmes, course units and modes of formal and informal learning taking place in HEIs. It has informed the development of the resources in the FashionSEEDS platform, filling gaps in areas where limited activity is taking place and connecting the parts into a holistic, connected and easily navigable learner journey. The themes identified in the Benchmarking Report, through further research and through the project events and activities, have been converged to focus on five resonating themes as follows:

- Employing a range of pedagogic approaches to the questioning of consumption and growth, in response to the economic phenomena of globalisation and consumerism, and their increasing pressure on natural resources. Using fashion as a means to regenerate ecological and social systems.
- Amplifying understanding of sustainability, through events that are engaging the public in social movements to engage more purposefully with change and exemplifying other stories of fashion that are under-represented.
- Designing for socio-cultural change, by reframing fashion according to the four pillars of sustainability, offering alternative courses of action through a range of interventions at course, programme, personal and institutional levels.
- Engaging tutors as learners and change agents in supporting a transformation of fashion education towards a sustainability paradigm.
- Exchanging ideas through a participatory, exploratory, emergent approach to fashion education, as a process of co-inquiry that is inclusive and representative of human and more than human perspectives.

CHAPTER 2.

The Four Pillars of
Sustainability

The premise of FashionSEEDS is that every part of fashion comes from nature. Its resources enable the creation of activities, garments, accessories and images that make up a distinctive part of our identities as humans. A core understanding of the limits of nature's systems, referred to as Planetary Boundaries (Rockström et al., 2009), and recognition of human equity as outlined in the Universal Declaration of Human Rights (UN, 1948), create a foundational understanding upon which environmental, social, cultural and economic pillars are built.

For the purposes of FashionSEEDS, an assessment of academic literature has been carried out to form pillar descriptions, drawn from multiple sources and co-written by team members. Together, they relate to the capacity for all living beings to flourish within the earth's carrying capacity. This takes sustainability beyond material and technical concerns, to a more expansive perception and articulation of human interdependencies in nature.

Many approaches to sustainability, particularly in policy and industry reports, focus on three pillars: economic development, social inclusion and environmental balance. This construct has a clear anthropocentric focus and does not recognise and cultivate diversity or an ecological world view. These three terms are an incomplete equation, their limitations widely acknowledged and articulated across a range of disciplines, belief systems, locations and cultures (Ceschin, F. & Gaziulusoy, I. 2016).

FashionSEEDS recognises the ecological and equity context of fashion and champions the role of culture as a fourth pillar for sustainability. Art and design have a distinctive and significant role to play in culture, with fashion involving each clothes-wearing person in the shaping of how we live in the world (Fashion SEEDS, 2019).

The following short descriptors of the pillars of sustainability have been applied throughout the FashionSEEDS project, including in workshop content, course, curriculum and learning design.



Photo: Dress by Lorna Doyle, University of the Arts London

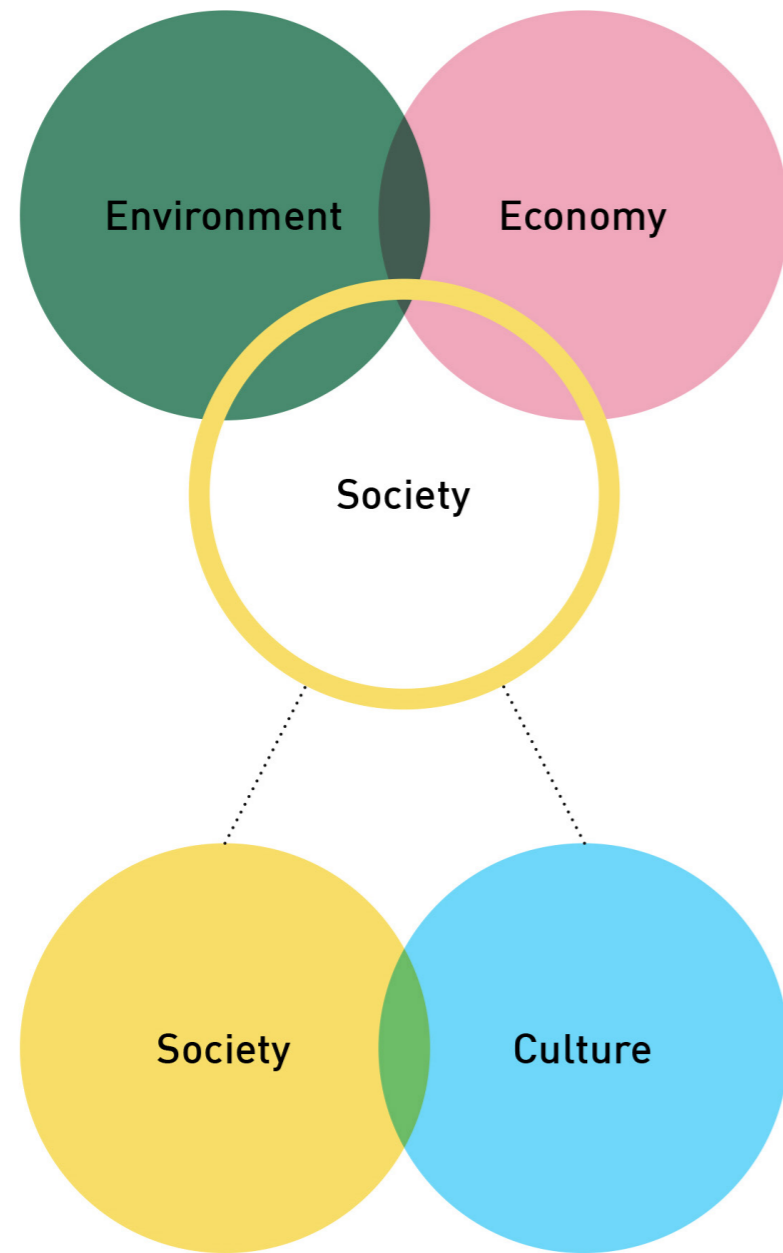


Figure 3. The four pillars of sustainability

Pillars

Economic sustainability
Economic sustainability refers to the ability of citizens to enjoy living conditions within agreed boundaries in terms of wage levels relative to costs of living and the gap between lowest and highest wages. It refers to regional and inter-regional access to investment and to a healthy relationship between productivity, employment and economic status.
Environmental sustainability
Environmental sustainability refers to our ability to live within biosphere limits, recognising the earth's carrying capacity. It draws on ecological principles and practices that see people as part of nature. It involves ways to preserve and regenerate the quality of the natural world on a long-term basis. It recognises the rights of all living beings.
Social sustainability
Social sustainability refers to the ability of a community to interact and collaborate in ways that create and exemplify social cohesion. It considers places, communities and organisations, formal and informal, and their resources, opportunities and challenges. It involves agency of diverse participants, voicing and acting with autonomy and harmony with other earth citizens.
Cultural sustainability
Cultural sustainability refers to tolerant systems that recognise and cultivate diversity. This centres inclusion to ensure that fashion is representative of and represented by diverse communities, locations and belief systems. It includes active ways to be anti-racist, to ensure gender-based equity and to preserve and safeguard First Nations cultural heritage, beliefs, practices and histories in connection with place, resources and ancestral lands.

CHAPTER 3.

Fashion Design
for Sustainability

Introduction

Fashion design for sustainability (FDfS) as a field of study draws on and intersects the burgeoning field of design for sustainability (DfS) and the more established, yet still young, field of fashion research. Fashion as an academic study is taught in universities across the world. This study relates to fashion as a huge and important global industry, its economic value equivalent to the world's seventh largest economy (McKinsey, 2016), encompassing micro to multi-national companies, social enterprises, co-operatives, not for profits, and stock exchange listed businesses. It is essential that a study of fashion explores and recognises change-making across these levels and locations, with sensitivity to differing risks involved for those within a range of situations in the current fashion education and industry systems. Fashion design for sustainability involves conceiving, realising and communicating multiple ways in which fashion activities can create prosperity at micro and macro scales whilst consuming less of the earth's finite resources. The globally widening gap between wealth and poverty, increasing polarisation between political, religious and other belief systems, and increasing intolerances increase the necessity for commitment to social, cultural and environmental sustainability.

Fashion design for sustainability necessarily considers power and agency, motivation and engagement, knowledge and understanding, between people at individual and community levels. This field of study is informed by a range of influential texts, recognised academic and industry practice, and by tacit knowledge. However, it is important for us to point out that fashion, design, education and sustainability involve sources of knowledge that seldom start with theoretical concepts and should not be limited by them. We should start from the fact that we can know more than we can tell (Polanyi, M. 1967). Michael Polanyi termed this pre-logical phase of knowing as 'tacit knowledge', to describe conceptual and sensory information and images that can be brought to bear to communicate understanding. The richness of such knowledge is often passed from educator to student and involves practical and ethical dimensions. It also involves the ways that those with lived understanding can recognise environmental degradation before science can document it, or how a craft tradition realises learning through making. The potential for mutual learning can only be realised when models and pedagogies of learning and the roles of tutor and learner are explored beyond that of many current university practices. In the case of fashion design for sustainability, thorny questions can emerge relating to the purpose and role of designers and tutors as complicit in practices not aligned to their personal values.

A Developing Discourse in Fashion Design for Sustainability

Concerns about human-induced degradation of nature crosses continents, communities and chronologies. The origins of the Western world's organised environmental movement date back to the late 19th century, with the Sierra Club Yosemite National Park and the work of John Muir. One of the first publications to link industrialised activity to degradation of nature, through its agricultural practices, *Silent Spring* (Carson, 1962) articulates the direct link between the use of pesticides in farming and biodiversity loss. The wider impacts of consumerist lifestyles were highlighted in the publication of *Limits to Growth*, commissioned by the Club of Rome, in 1972 (Meadows et al., 1972). Drawing on system dynamics theory and computer modelling, its predictions showed that, if then current patterns of growth continued without considerable change, the environmental limits of our planet could be reached within the next 100 years. Subsequent modelling undertaken to produce the Intergovernmental Panel on Climate Change (IPCC) report in 2018 on the impacts of Global Warming of 1.5 degrees (IPCC, 2018, World Meteorological Organization, Geneva, Switzerland) demonstrates the consequences of the lack of response to what was, at that point, a much smaller problem than the one that we now face. Through the timeline of the FashionSEEDS project, further evidence, including the IPCC sixth assessment report 2021 and the IPBES report 2019, reinforce unequivocal evidence that human influence has warmed the atmosphere, ocean, and land. Limiting human-induced global warming to a specific level requires limiting cumulative CO2 emissions, reaching at least net zero CO2 emissions, along with strong reductions in other greenhouse gas emissions (IPCC, 2021). Nature and its vital contributions to people, which together embody biodiversity and ecosystem functions and services, are deteriorating worldwide. Nature is essential for human existence and decent quality of life. Nature across most of the globe has now been significantly altered by multiple human drivers, with the vast majority of indicators on ecosystems and biodiversity showing rapid decline. Seventy-five per cent of the land surface is significantly altered, 66% of the ocean area is experiencing increasing cumulative impacts, and over 85% of wetlands (area) has been lost (IPBES, 2019).

Fashion is directly implicated in this situation and its intersectionality in gender, race, class and able-bodied terms exacerbate social injustices.

Fashion design for sustainability is informed by a range of academic and non-academic disciplines, tacit knowledge, rituals, habits and teaching practices, which combine personal, professional, academic and industry knowledge. This includes histories of social design (Papanek, 1971) and environmental design (Fuad-Luke 2002) with a range of disciplines, including work started at the Sloan School of Management at MIT in the late 1950s and subsequently in computing (Checkland, 1981; Laszlo and Krippner, 1998) and in a range of life sciences (Capra

and Luisi, 2014), deep ecology (Bateson, 1979) and social sciences (Max-Neef, Elizalde and Hopenhayn 1991). The underlying understanding of interdependence recognises a system as being more than a sum of its parts (Meadows, 2009, p. 188), all of which are interconnected in multiple directions. The practices of designing are thus expanded to include not only products, but the designing of services, systems and metadesign, and re-designing the rules of the system (Giaccardi, 2005; Wood, 2007).

There is an expanding academic discourse in fashion, design and sustainability, whilst the most cited scholar in this field continues to be Professor Kate Fletcher, whose seminal publication, *Design Journeys*, published in 2008, marks a turning point in thinking about fashion and sustainability beyond a dominant, reductionist approach to fixing singular parts of a garment's material or technical features, to consider fashion's wider social practices, its lived experiences, as ways of being in the world. Through subsequent publications, the actions of citizens have been gathered and shared to exemplify inherent human capabilities (Fletcher 2018). Inside and outside of academia and fashion's professional and social practices, ingenious ways in which fashion can contribute to convivial communities, just societies and restorative practices are increasingly being explored by designers, in businesses, social enterprises and not-for-profit organisations (see *Fostering Sustainable Practices*, Centre for Sustainable Fashion 2021).

Study of the power dynamics of fashion in the context of sustainability cross-references the work of social scientists and philosophers, politics of design (Escobar, 2018; Manzini, 2015) and the connecting of environmental, economic and social parameters of sustainability (Raworth, K. 2018). The literature on sustainability and spirituality (Walker, S. 2011; Thomas, S. 2014) provides a valuable articulation of some of the cultural elements of sustainability and its links to belief systems. The discourse in fashion and sustainability in the Global North has, however, lacked reference to, and learning from and with, people, places and cultures of the Global South, where centuries-long wisdom, knowledge and practices of indigenous and other peoples who honour the earth, hold vital guides to how we might live well, within planetary boundaries. One of the better-known examples of ways in which heritage, tradition, politics and culture has garnered support for social change is through Ghandi's work (Hempson, L. 2018), where the weaving of Khadi became a symbol of social justice that endures. There are many unrecognised and unreferenced artistic, creative and multi-sensory practices that contribute to sustainability; the work of musicians, poets, sculptors, photographers, gardeners, home-makers and community members whose work influences communities, behaviours, intentions and interests, played out through matters relating to attire.

The development of new economic models that factor in the full costs and contributions to fashion's practices is essential to the realising and recognising of sustainability. The exploring of value is at the core of a shared and lasting prosperity, which involves the self-organising of humans in a collective understanding of our interdependencies. Researchers, tutors and students can draw on new thinking about prosperity beyond growth (Jackson, 2009), models of shared value (Porter and Kramer, 2011), and matters of care (Puig de la Bellacasa, 2017), in considering fashion's professional and personal activities.

Fashion design for sustainability involves changes in actions, knowledge and understanding with ongoing reflection and action over time. This is an endeavour that calls upon human creativity to imagine, conceptualise, visualise and effectively communicate alternative pathways for living meaningful lives while consuming far less in terms of energy and materials (Walker and Giard, 2013). This starts not with the symptoms of our current unsustainability, but with a study of its root causes, questioning the errors of modernity perpetuated through the techno-optimistic, eco-efficiency approach (Walker, 2017).

Fashion design for sustainability therefore involves a profound reappraisal of human values in today's society, a consideration of meaning and connection to the locale, tradition, culture (Walker and Giard, 2013). Fashion designers, in their ability to conceive new ideas and to realise those ideas pragmatically and practically in tangible forms, are well placed to knit together such considerations to make change in and through their work. Fashion design for sustainability offers a values-led and knowledge-based approach (Williams, 2016) to design, ensuring that good intentions are matched to credible sustainability actions.



Photo: Angelica Ellis, Ashaana Bheir and Memuratu Barie, Central Saint Martins. © Alys Tomlinson

CHAPTER 4.

Fashion Tutor Needs

Tutors have a vital role in developing ways in which learners understand and perceive themselves in relation to climate, societal and personal health concerns of our times. Fashion educators' impacts are realised through learners' wide-ranging livelihoods, activities and habits, across diverse socio-cultural contexts. Tutors are often hands-on and multi-talented, moving seamlessly across a plethora of tasks, as they support and develop people, materials, products and processes. They engage in reporting, assessing and showcasing ways in which individuals, groups and a sector contribute to the world.

Whilst there has never been more information available or more talk about sustainability, tutors are often time-poor; they lack structures for developing their own sustainability knowledge and practice, and they have limited access to high-quality, directly relevant resources created by their peers and educators in other universities. To ensure that the project usefully responds to tutors' needs, the project team undertook research to better understand the content and format of resources that tutors require in contributing to a transformed fashion system.

Findings from Educators Questionnaire and Focus Group

To inform the FashionSEEDS platform and content design, a user needs analysis was carried out with the FashionSEEDS target audience: undergraduate and postgraduate tutors of fashion and textile related subjects in higher education. This section provides an overview of the research methods and research findings. It identifies important considerations for the project team in developing the platform for all those engaged in fashion education processes and practices.

The objective of the research was to gather detailed insights from fashion and textiles educators based at the four partner institutions: London College of Fashion (UAL), Politecnico di Milano, Design School Kolding and Estonian Academy of Arts.

These insights demonstrate approaches educators currently take in developing curriculum, teaching content and pedagogy and to what extent they do this in relation to sustainability. Of specific relevance to the development of the FashionSEEDS open source, online platform, was to gain a better understanding educators' use of online teaching and learning resources.

Research Methods

The research was carried out in three phases. Firstly, through data collection via an online questionnaire, involving a range of tutors from the four FashionSEEDS partners. Secondly, through a focus group conducted with tutors at London College of Fashion (LCF). The third phase consisted of triangulating findings with insights from identified tutors at Politecnico di Milano, Design School Kolding and Estonian Academy of Arts. Results for the FashionSEEDS Educators Questionnaire were gathered via an online Google Form between 1 November 2019 and 16 December 2019. A total of 63 responses were collected and all respondents gave their consent for the data from the questionnaire to be used in the FashionSEEDS research outputs. Within the questionnaire both qualitative and quantitative data was gathered. 14 of the total 20 questions were quantitative, including multiple choice questions and Likert scales. Six of the questions allowed for free text answers, to allow the respondents to answer more fully, or to elaborate on their own experiences and opinions. Analysis was made of the questionnaire findings, collating data at institutional level and at cross-institutional levels.

The focus group was carried out with members of teaching staff from the BA Fashion Design Technology Womenswear course at LCF in December 2019. LCF was selected as a case study for the focus group due to its high concentration of fashion-specific courses, students and tutors, in relation to other FashionSEEDS partners. LCF has an annual population of 5,500 students, on 56 specialist fashion subject courses. In the School of Design and Technology, there are 2,000 students studying 20 specialist fashion design related courses at undergraduate and postgraduate levels.

The focus group participants were asked to browse three different online resources relating to fashion, design and sustainability on their laptops. Following this activity, eight questions were outlined to guide discussion, using a semi-structured approach allowing for adaptability and flexibility. The discussion was audio recorded and a transcript written up to use in analysis of emerging themes in relation to needs and best practice, as outlined in the final part of this chapter.

Analysis of Survey Findings

A total of 63 respondents completed the online questionnaire from all four partner institutions of the FashionSEEDS project. The response rate was in line with the relative size of the universities involved in the research, with 29 respondents from LCF, 17 from Politecnico di Milano, nine from Design School

Kolding and eight from Estonian Academy of Arts. All references to responses are taken from anonymised comments, with permissions to publish ascertained in the initial part of the survey.

Most respondents (71%) self-identified a level of understanding of sustainability in their subject area levels at '4' or above on the Likert scale, indicating a moderate to high level. Responses spanned the scale, with 29% of respondents at the lower end of the scale (below 3). The most common level was '5' on the scale, selected by 35% of respondents.

The frequency of including sustainability as a subject in teaching correlated with the response to the 'level of understanding' question, with 76% of respondents (48) selecting '4' or above, suggesting that the subject is frequently coming up in their daily working practice. 14% of respondents (nine) state that sustainability is raised in their teaching every day, whilst the picture is mixed, with three respondents stating that it never comes up in their teaching practice.

All respondents indicated an interest in learning more about the subject, in the context of their teaching, with 56% of respondents (35) selecting the highest option of 'extremely interested', and overall 95% of respondents selecting '4' or above. This was further endorsed by 86% of respondents indicating a high or extremely high wish to include more sustainability themes into their teaching.

When considering barriers to learning and applying deeper knowledge levels into their teaching, the clarion call was 'lack of time', selected by 87% of respondents (55) and through additional comments in the free text space in the questionnaire. The next two highest ranked responses indicated 'Difficulty in finding appropriate resources related to your discipline' (52%), and 'Lack of staff development opportunities' (51%). This was further compounded by a lack of 'curriculum development discussion opportunities'. One response suggested that, 'it would be great with more interdisciplinary dialogue, gathering the knowledge which we all possess'. A further barrier was identified as 'credible information is scattered and distorted heavily by media exposure'. Alongside these clearly articulated concerns relating to tutor knowledge and practice development opportunities and access to credible sources of information, a second theme emerged relating to student experience, where a lack of space in content-heavy timetables was highlighted. The need for space in the timetable was also highlighted by a concern about the 'basic knowledge of the students compared to the complexity of issues'. Another respondent cited the difficulty 'to get materials to utilise for physical product' as a challenge. These two themes highlight the need for an expansion in conditions for both student and tutor to undertake explorative enquiry.

When considering pedagogy, unsurprisingly for educators of fashion design, the most common pedagogic principles identified were 'Learning through making' (94%) along with 'Creative and critical thinking' (76%), with 'Interdisciplinarity' and 'Systemic thinking' jointly receiving 70%. The least selected pedagogies were 'Place-based learning' and 'Informed decision-making', with only 32% of respondents selecting these options. This indicates a need to support inquiry beyond the classroom, through participatory learning, collaboration in community and with more than human interactions. (ie with elements of nature's systems) It also highlights a wider articulated lack of subject and location-specific science-based data relating to climate change, biodiversity loss, water scarcity and access to data that is relevant and applicable to design. This is a concern of industry as well as academia and speaks to the availability and transparency of data.

Respondents were almost unanimous in expressing their interest in testing new pedagogies in their teaching practice, with (98%) indicating interest at the higher end of the scale, selecting '4' or above, with 51% extremely interested in doing so.

In seeking to understand current sources to support teaching, respondents were offered a list of reference points and asked which they use. Books and websites were identified as the most common sources for tutors when planning curriculum content, selected by 70%, followed by academic journals (62%). The least favoured sources of information were social media (8%) and magazines (10%). 13 respondents selected 'other' and mentioned additional sources including colleagues and other faculty at the University, archives, conferences, exhibitions, industry knowledge, personal networks and direct experience. These responses echo the findings from earlier questions, identifying the need for space to converse, share, learn from each other and to connect with people from across the fashion education system.

A deeper questioning of the value of online content currently available relating to teaching practice yielded clear and useful responses. The top three most valuable online resources or tools were selected as 'Examples of learning outcomes' (46%), 'Case studies' (44%) and 'Presentation slides' (43%). Perhaps surprising due to the expansion in this area, the least valuable resources, as indicated by the responses, were 'Podcasts' (5%). The top three most valuable online resources or tools related to teaching methods were identified as 'Practical workshop ideas' (75%), 'Lesson plans' (57%) and 'Guides for different pedagogies' (51%). The option 'Teaching aids eg. design cards' had the lowest response rate, with only 19 respondents selecting this option. These findings highlighted a need for further

discussion, as 'even further examples of in-class methodologies' were requested, whilst one respondent said that, 'Information is what is lacking, not teaching aids. Main information needed (is) about sourcing and selecting sustainable materials and processes'. This highlights the speciality of fashion design as a subject and the need for specific resources relating to its materiality.



One participant added that, 'Sharing of feedback and how students respond with constructive further ideas could also be helpful', which further indicates the value of a connected systems approach, as information in isolation is not enough. The value of discourse between tutor and student was highlighted through a request for 'student and teacher forums'. The lack of connection between cultures, locations and perspectives was also highlighted by the request 'to promote diverse thinking and research practices'. The thread running through all the responses was, however, a prioritisation of other elements of teaching practice and course content, meaning a lack of time and space for development of fashion design for sustainability. As one respondent noted, 'So many resources are probably already available – the problem is time in finding and using effectively.' This systemic problem requires change at multiple levels. An intervention requested in the responses was, 'A go to platform created by (the) centre for sustainability that defines all areas of the subject, where traffic can also be monitored as part of research and development of the learning tool to enhance and advance world leading content that may indeed come from LCF researchers.' This request directly informs the development of and plans for continued engagement with the FashionSEEDS platform.

More granular detail regarding online resource use and its value was ascertained through responses to a series of questions (see appendix for details.) The starkest finding was that most respondents were not aware of most of the resources listed in the questions, and in fact found the question provided them with a useful list. Only three of the 12 resources listed were known to more than 10% of respondents and were cited as valuable to only just over 5% of respondents. This finding indicates the need to provide relevant and accessible resources and to create or align with a network of educators who can share and cross-reference their work in this area.

To identify the points of intervention in the fashion education system that could contribute to the transformation in HEIs, the fashion sector and wider socio-economic levels, tutors were asked what they identified as most significant for changing their own practice. This sought to dig into the concerns about time, to see what was creating this barrier. 17 specific mentions were made of the need for related staff development, academic support and opportunities for developing personal knowledge and expertise. Comments included 'support to take time out for development', 'experiencing other teachers giving lessons in the field', and 'I feel researching more into this field might bring me new answers'. A further six people commented that teaching needs to be supplemented by external or specialist lecturers, and highlighted the importance of strong links with industry to support this. One respondent requested, 'More debates/collaborations

that encourage staff and students to discuss subjects related to sustainability in a safe environment that fosters open dialogue.' Formal commitment was suggested through writing the subject into the curriculum and articulating how it is addressed in unit handbooks. The need for an expansion of thinking is also highlighted, through 'taking it away from preconceived stereotypes, more future thinking, more impact thinking.'

The participants offered an expansive list of other suggestions, including creating an archive of available materials and fibres with up-to-date, relevant examples; shared tools; and a database of resources and figures, with examples of how these have been used in teaching, through a request for 'realistic applicability'. The enormity of undertaking a fundamental shift from a rational, mechanistic, modernist approach to fashion education to a relational, ecological, emergent approach is not underestimated. One respondent said, 'There's a great desire to learn more and to apply this in teaching but as the subject is vast and diverse this requires time to develop a thorough holistic view and approach.' There is a sense that this is not currently considered; 'we're sadly not given that time.'

Finally, to understand how change can be guided and amplified, the motivations of tutors was explored. 18 responses referred to personal and professional development that ensured their knowledge and skills were up-to-date in a rapidly changing industry. Some respondents explicitly mentioned how this would increase their confidence in teaching this subject. One participant wrote that, 'Sustainability is a huge and important subject but we don't each have a fix-all answer. I believe we can share our experiences and learn from each other'; another commented that, 'It would enable more variety within my practice, more openness and reflection.' Whilst all responses relate to the quality of the student experience, some responses relate directly to students and the student experience, explicitly making the connection that improving their own knowledge directly benefits students. One wrote that, 'The chance to update existing understanding and practice in an ever more relevant mindset and approach allows us to prepare our students better for the future.' Another commented that, 'The relevancy of the learning outcomes for the students would create a much more diverse and real idea of the constraints with transforming the industry.'

A deepening of knowledge and expansion of understanding, contributing to the field of study is also identified by several respondents, however there is concern that the subject is understood more as 'a theory and not physically manifested' and that 'talking becomes very abstract', so real examples are needed to illustrate how to meet the challenges. An ambition 'to educate and open up a wider range of possibilities in sustainable design than previously able to do' evidences the

role of education in vocational, disciplinary and societal terms. This links directly to the project's ambition to evidence HEIs' role as enabler of new knowledge for prosperity in social, environmental, cultural and economic terms.

The findings offer a rich and varied set of insights for the research team and others involved in developing activities and infrastructures that can enable universities to fulfil their social purpose. However, the clear message is that there is a need for relevant, accessible, appropriate resources and an infrastructure that fosters reflection and action through collaborative inquiry. '(Framing) within staff development would allow for dedicated and efficient access and understanding of resources, as well as meaningful exchange with fellow academics and practitioners.'

Analysis of Focus Group Findings

A limit to in-depth consideration, but opportunity to be nimble

The cyclical, ongoing aspect of curriculum content development was highlighted by participants. Curriculum design and development is very rarely a process starting from scratch, as teams are often working with and reviewing existing projects and teaching content, updating and adjusting year-on-year. Due to the process of validating course documents, there are limitations to change, with the only opportunity to fundamentally change the curriculum arising during a revalidation process, commonly every four years. However, time pressure often leads to the planning process being carried out as quickly as possible, limiting in-depth consideration of content.

'Time' was a recurring word throughout the conversations. Reactive planning was highlighted as being due to short-term thinking constraining the ability to have longer-term plans that would allow the content to be more holistic and integrated. Without sufficient time for this relational work, they feel that the content can get watered down, and treated as an add-on. As one respondent noted, 'We don't really have time to research and contextualise and maybe think about the bigger picture when we're putting these things together'. Conversely, the fast-moving elements of fashion were seen as an opportunity to be responsive and up-to-date.

Joining the dots and seeing the system

The participants mentioned that there can be a lack of continuity from one year to another – for example, there is currently a good focus and drive toward sustainability in year one, but this momentum is lost in year two. The crowded curriculum and limited teaching contact time can create tension between many competing needs. Participants expressed that there is huge pressure to include a wide range of content, from design to technical construction, cultural and contemporary knowledge, industry insight, trends, and software skills, and that the complexity of sustainability requires dedicated curriculum time which, if included, means that something else must come out. One participant commented, ‘When the units... (are) so crammed with other information, to add that (sustainability) on top feels like the worst possible thing we could do.’

The breadth and scope of sustainability was also discussed and how this can be a challenge. Participants explained that they purposefully take a more general approach because if they were more focused, e.g. to deliver a project on circularity, students may have a very narrow understanding of what sustainability could be. One participant goes on to say, ‘There’s the fear that they think that that’s the only way that they can be sustainable.’ The participant describes how the curriculum allows for the exploration of personal values in year one through a manifesto as a way for each student to define their own interests. ‘There’s so many different areas of sustainability. So... you don’t want to focus on one.’

As the focus group conversation moved towards discussing online resources, positive responses were received relating to the three resources shown and the wide range of information and content that was available to look through, download and use in their teaching. However, there were once again comments related to capacity, and the time it takes to work through and absorb the content on the resources. One participant said, ‘When am I going to have time just to sit down and try to unpack all of this?’

The constraints of time extended into participants valuing the resources not primarily for their own development, but to share directly with their students, or with specific students. ‘It immediately makes you think of how useful it would be for students because we don’t have time, or necessarily the expertise in-depth to point students in those directions, whereas you may just be like, read this, this will be really good for you.’ This highlights the value of the resources to students on the one hand, but the gap in opportunity to develop tutors’ own knowledge and confidence to teach fashion and sustainability themselves. Tutors want to teach what they themselves have developed.

Downloadable assets such as presentations and worksheets could be valuable, however. As one participant said, ‘It would be really rare for us to deliver a whole hour’s worth of content that wasn’t our content’. Resources that are adaptable and editable could offer a bridge between what tutors can do now and how they can develop their own practice.

Designers expect well-designed resources

Design can enhance information and bring it to life. It can also make a connection to the user, through messaging that is directed to an intended audience. Resources that have a corporate/infographic feel were found to be quite off-putting for some. One participant said, ‘The thing I struggle a lot with these things is... their design and really a lot of the downloads are not very engaging in terms of their format or their... general accessibility.’ Specific mention was given to resources that were engaging, with the example of compelling video content. Well-designed content was seen to connect personal and professional development, investing in tutors to develop their own practice (as many tutors are fractional and working in industry). Well-designed navigation and engaging visuals offer a means for tutors to explore this topic in more exploratory ways.

Insights from other Project Partners

To represent the views of tutors from project partners, the findings from the initial focus group were shared and reviewed by tutors at Politecnico di Milano, Design School Kolding and Estonian Academy of Arts. Tutors were identified from those participating in the FashionSEEDS tutor training event hosted by Design School Kolding in February 2020. These tutors therefore have a prior understanding of the aims and objectives of the FashionSEEDS project and are engaged, to different degrees, with teaching sustainability at their institution.

Politecnico di Milano

The challenges in changing a curriculum that is often extremely dense, limiting the ability to incorporate sustainability content, were echoed. One tutor added that, ‘Sustainability can also be considered a transversal topic that can be taught in relation to other content – technical, cultural and industry knowledge, for example.’ This means it is not necessary to replace one topic with another, but more to thread sustainability through existing areas.

In relation to the breadth of the topic, it was agreed that sustainability has a very wide meaning and touches upon many points. Therefore, including just one tool or one vision of sustainability potentially limits students to one perspective and may prevent them from exploring possibilities, and their consequences, in a reflective and critical way.

Acknowledgement was made to the key issue of time in relation to frequently rushed course preparation. The lack of time to produce new teaching content

for projects each year was highlighted. One tutor said, 'Time is important to gain extra knowledge, to get prepared and proficient on a new piece of knowledge, to then explain it and apply it in a course for students.' It is not simply a matter of the time required to find relevant content or resources, but also, 'to compare the sources, to learn, to metabolise and to reflect critically on content, to apply the knowledge in some projects, to build lessons learned, to understand how to apply the knowledge in the course and so on.' This indicates the need for an ongoing process of development, testing, reflection, refinement and further application.

To make it easier for the practical daily routine of tutors, the FashionSEEDS platform must be built in an effective way. As one respondent said, it should 'not just be a list of links and what is available out there in the world of approved knowledge, but should be something clustered and categorised considering the needs from a teaching and research point of view'. Having the platform organised in such a way could allow tutors to be more efficient and effective in their use of time in preparing for teaching sustainability on their courses.



Design School Kolding

The curriculum development cycle is often a 'patch-up' and refining of an existing course description to make it match changes in the overall learning outcome. This chimes with findings in the focus group. At Kolding, one tutor said, 'For now, my solution is to make sure the course briefs contain sustainable teaching covering the four pillars and with progression matching the academic levels.' Whilst the distinction of Kolding is its link to histories of craft-making and its size means that people are intricately connected, due to its smaller size and one campus location, time is also a scarce resource, with very short deadlines further influencing outcomes.

The small number of permanent staff on the teaching team leads to a reliance on external teaching staff, which results in issues including:

- Extra time needed to hand over information;
- Loss of continuity;
- Fewer in-house staff to share the culture.

Focus group findings regarding the addition of sustainability to the curriculum are echoed. One tutor said, 'I think we'll have to see sustainability as the starting point and not the add-on to an overcrowded course.' This requires time, and the need to revisit course descriptions as the progression must also be aligned regarding sustainability.

In relation to focus group findings regarding exploration of resources and staff development, the benefits of peer-to-peer sharing and dedicated, immersive opportunities were highlighted. One tutor commented, 'Personally I found that attending the FashionSEEDS course gave me some time off to explore and exchange ideas about how to implement sustainability at different levels. It's somehow easier to get things done when taking a couple of days fully off instead of trying to achieve the same working on it an hour here and an hour there.'

Another added, 'Sharing knowledge rather than teaching it would be a faster way of reaching a higher degree of sustainability and flipped learning and sharing directly would support this.' There was also agreement that resources should be flexible, allowing tutors to choose elements that are most relevant and appropriate for their own teaching context.

Estonian Academy of Arts

There was unanimous agreement regarding the pressing issue of time for tutors, with a further dimension to this for visiting lecturers. There is an opportunity for ongoing research or industry practice to be an iterative process of integration into teaching. However, as one tutor noted, aligning changes in the world, 'might not relate to the general course curricula of the faculty nor provide any kind of contextual continuity'. There can be conflicting input from the directory board about topics such as raw materials, design and sustainability, in the design department in general. This highlights the need to discuss a range of perspectives, not to reach a consensus, but to create a rich, critical discourse that can advance ideas.

There was agreement that, 'The breadth and scope of sustainability can also be a challenge because of the complexity of the topic.' One tutor added that online resources, 'however well-made, should be flexible to adapt' to account for specific exercises or tasks for students.

The benefits of a flexible, adaptable curriculum extend beyond online courses and resources. One tutor said, 'Because our course unit descriptions are sometimes rather general... I have the possibility to implement sustainability into the projects I teach.' In this tutor's experience the topic of sustainability is addressed on a daily basis, and it is openly discussed with students. 'I do feel it is important not to know everything about sustainability but to be able to critically analyse the information.' Importance is given to up-to-date knowledge, and the possibility to share information and ideas about the topic with colleagues and invite guest lecturers onto a course to share their expertise to fill gaps where tutor knowledge may be lacking.

The research identified tutor needs, aspirations, motivations and barriers in developing practice and course content in fashion design for sustainability. Analysis of findings endorse the need for a platform for tutors that takes a systems-thinking approach and offers the means for tutors to develop their own knowledge, a pathway that encourages peer-to-peer sharing and resources that can be applied into teaching that are flexible and adaptable. The mixed methods approach, inviting insights, feedback and suggestions from tutors, enables a participatory approach to developing resources for and with tutors as learners and guides in transforming what and how fashion is taught and learnt, to create change in and beyond education, impacting on the fashion system at wider scales.



Photo ©Dilys Williams

CHAPTER 5.

Fashion Design
Education for
Sustainability

Education for Sustainable Development

Education for sustainable development (ESD) is an overarching paradigm that guides and transforms core disciplines, second tier disciplines and adjectival education so that they contribute to a more sustainable future (ESD Sourcebook, 2012). It forms the foundation of the United Nation's work in education, including the Decade of ESD (2004-2014) and the Global Action Plan for ESD. Following a series of pre-conference workshops, the UNESCO World Conference on Education for Sustainable Development was held from 17 to 19 May 2021, calling for learners of all ages to be empowered to #LearnForOurPlanet and act for sustainability. The Conference ended with the adoption of the **Berlin Declaration on Education for Sustainable Development** (UNESCO, 2021.)

'In today's world, education must be about building peace, sustainable development, greater justice, social equity and gender equality – in short about learning to live together on a planet under pressure.'

Educational content up close: Examining the learning dimensions of Education for Sustainable Development and Global Citizenship Education (UNESCO 2019).

'ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society.' (UNESCO 2019)

Whilst these narratives recognise a change of educational paradigm, the term and its scope must be scrutinised as it describes change in education without referencing the need for paradigm transformation, in the wider systems in which education sits. There has been a call for the re-termining of ESD as education for sustainability or education as sustainability (Sterling 2001), recognising the interdependencies between life systems and socio-cultural and socio-economic sub-systems of life and lives.

'If education for sustainable development becomes assimilated with a mainstream which otherwise remains unaffected, we shall have achieved little.' (Sterling 2001)

Sterling argues that sustainable education involves cultural change with both humanistic and ecological values at its core. His work is aligned with that of David Orr, who's publication, *Earth in Mind* (2004), calls for a reframing of education

from an ecological perspective. This research aligns well with the discourse in fashion education for sustainability, where the cultural and social dimensions of sustainability are placed alongside changes in economic models for thriving within planetary boundaries. Despite the academic discourse questioning the language and intention of the relationship between education and sustainability, ESD continues to be a globally applied term through the leadership of UNESCO and the Sustainable Development Goals. FashionSEEDS explores and extends this discourse, in the context of fashion and wider art and design education, reviewing and changing the language and relationships involved in teaching and learning the interdependence of all phenomena and that all humans are embedded in the cyclical processes of nature.



Photo: Jaya Twill in the studio. ©Alys Tomlinson

Ambitions of a Fashion Design for Sustainability Education

In the context of climate and biodiversity emergency and increasing social inequalities, fashion design educators are increasingly recognising the need and opportunity to guide the values, knowledge and actions of students, as they prepare for citizenship and livelihoods. Fashion design for sustainability (FDfS) teaching must prepare students with the capabilities to make change within an existing industry as well as exploring different ways of making a living through fashion. This poses a distinctive challenge to tutors whose students are likely to seek employment across a wide range of roles in the fashion system, as designers in multi-national businesses, as facilitators in social enterprises and through radical approaches to design in our times. Fashion exists inside and outside of a commercial, transactional context, however it is understood that most learners on fashion courses seek ways to professionalise their design skills to create livelihoods for themselves and others. Fashion design education for sustainability involves a re-conceptualisation of what we teach, where course content supports the development of deep knowledge and skills in fashion, design and sustainability, and how we teach, where learning fosters empathic connection, reflexive thinking, collaborative practices, co-creation and the transformation of the learners, as well as of the 'products' of learning.

Teaching fashion design involves guiding learners in imagining shapes and situations that are yet to exist, a 'sense that what isn't yet could be' (Sennett, R. 2009, p. 209). It also involves processes of making, with others, towards the creation of garments that come to life through wear. The studio is the location of teaching practical skills, but also the space for risk-taking, for consideration of the intention of designing as well as its 3D forms. As the locations of teaching diversify, with studio work combined with digital learning, lectures, workshops and in-community practices, so too must the pedagogies of teaching develop to amplify the soft, not traditionally recognised skills alongside technical, creative skills. Some of the vital characteristics of designers include 'support and coordination skills [...] an important part of the designer's repertoire' (Thackara, 2013). Designers need 'to be attuned to place and context' (Van der Ryn and Cowan, 1996, p. 63) and more conceptually, design for sustainability 'should be considered in the context of the development of human ideas' (Walker and Giard, 2013). FashionSEEDS offers a set of pedagogical and epistemological approaches to teaching and learning, developed by the research team, drawing on their own practice and that of other scholars and with reference to resources developed through the United Nations Decade of Education for Sustainability (ESD Sourcebook, UNESCO 2012).



Photo: Designskolen Kolding



Photo: Designskolen Kolding

CHAPTER 6.

Pedagogic
Principles

Context

The fashion higher education system involves an interplay between student learners – designers in incubation, experimentally developing a disciplinary and self-reflective understanding – and professional practitioners – designers in practice, applying their knowledge and understanding to a bounded context (Williams, 2018). This interplay creates an inherent tension. Additionally, universities are usually mandated through governmental educational policy, creating prescribed courses, whereas studio practice is a location where the values, hopes and imaginings of students are brought to life through a discourse with tutors, technicians and peers. The elements in this interplay are traversed through curriculum, taught and learnt through formal and informal practices, shaped by the perceptions, rules and goals of those involved. The tutor acts as a ‘challenger’ to engage students in critical consideration of their ideas, but also as a ‘challengee’, a person to whom students can bring critical questions, challenging the tutor themselves. The tutor thus becomes ‘change-guide’. The context of fashion has changed dramatically since many tutors were themselves students and as courses change, so must pedagogic principles, teaching practices, submission requirements and assessment criteria, to recognise success in economic terms within social and ecological agendas.

Fashion design teaching typically involves studio practice. This is well suited to sustainability, as students develop knowledge and understanding through a constructivist approach, creating critical discourse that challenges assumptions and explores the ‘what, why and how’ of knowing, acting and being (Barnett and Coate, 2005: 2 p13 in Orr and Shreve, 2018).

The FashionSEEDS benchmarking report evidences the value of such practices, whilst highlighting a shift in education towards more prescribed teaching and learning due to requirements for greater accountability. The report highlights a need for research-led teaching and interdisciplinary approaches to connect values to knowledge in scientific, art and design and wider humanities terms. It highlights that whilst a range of pedagogies is already employed by tutors, there are gaps in these practices and a need to offer tutors the ‘how’ (pedagogic principles and teaching practices) as well as the ‘what’ (curriculum and course development) of sustainability. The FashionSEEDS platform offers resources that span and cross-reference the what and the how of fashion education for sustainability.

Teaching is shaped by, and shapes, contemporary thinking and the university has long been regarded as a place for the conditions for new knowledge, perspectives and understandings to be found. The Bauhaus education system is a well-known example of design education shaping and being shaped by new

knowledge and practice. Developed by Walter Gropius in 1919, its approach to making as learning and its industrial application heralded a shift in culture and industrial design practice.

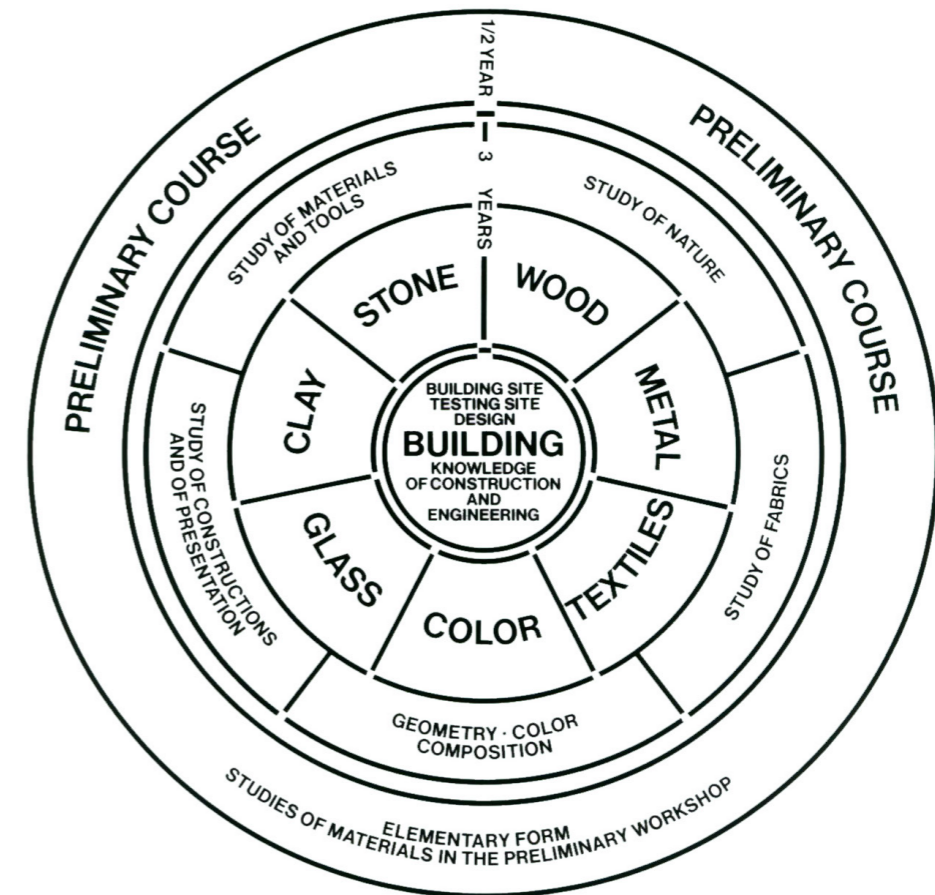


Figure 4. The Bauhaus model (Walter Gropius, 1919) diagram reproduced by Designlab

More recently, Orr and Shreeve (2018) developed an art and design curriculum with pedagogies for the nurturing of creativity, drawing on traditional and experimental approaches, which, when cross-referenced with the FashionSEEDS pedagogies, evidence how apt art and design education is in the consideration of interdependence.

The FashionSEEDS pedagogies

The eight pedagogic principles outlined in FashionSEEDS have been developed through reference to the Centre for Sustainable Fashion Pedagogies (Williams, 2019) team member experiences and reference to published research. In keeping with most art and design teaching, FashionSEEDS takes a constructivist approach that understands fashion design for sustainability as possibility-creating as well as problem-solving (Williams, 2015). It draws on the lived experience of project members whose scholarship has been tried and tested in their own establishments and with reference to findings from the project's research, drawing on teaching practices in geographic locations around the world.

There is an increasing body of research relating to fashion and sustainability, (Fletcher, K. 2008; Black, S. 2012; Fletcher, K and Tham, M. 2014; Gwilt, 2014) and a substantial body of work in the development of education for sustainability (Sterling, S. 2001, 2003, 2009. Orr, 2004; Moore, 2005; Wals and Blewitt 2010; Ryan and Cotton 2013). However, other than Parker's Fashion Educators' Handbook (2009) and publication of individual projects and methodologies with a specific focus, which can be found in a number of recent PhD and MPhil theses, there is a paucity of scholarship developed for and by fashion tutors, that recognises, develops and builds on fashion design education for sustainability pedagogies and practices.

The following short descriptions relate to pedagogies that have been applied to workshop content and courses, curriculum and learning design throughout the FashionSEEDS development process. These are explored in reference to the three dimensions of Shulman's signature pedagogy (Shulman, L.S. 2005) involving surface structure, deep structure and an implicit structure. This covers the pragmatic, operational 'what' of teaching and learning, along with understandings relating to 'how' to put pedagogies into practice. The ability for tutors to reflect on and discuss moral beliefs relating to values and professional attitudes forms the 'why' that is often squeezed out of staff development and course preparation time. These pedagogies are cross-referenced into the Course Designer, Design Canvas and FashionSEEDS Cards on the FashionSEEDS platform as applications of their relational elements.

Systemic thinking (ST)

In recognition of the living systems (Capra and Luisi, 2014) of which we are a part, learners need an understanding of the relational elements of ecological sustainability. Systemic thinking (ST) encourages a holistic viewing of situations marked by complexity and supports integrative and adaptive processes of thinking and practice (Tilbury and Ryan, 2013). Engaging in practices of systemic thinking involves consideration of ecological and social systems. Learners are introduced to the nested systems within which the fashion system lies and are supported to identify intervention points for change towards sustainability. ST involves the tutor engaging learners in the creation of feedback loops to understand cause and effect, of how a decision relates or impacts consequences of actions which are, and are not, intended (UNECE 2010b). A study by Ferreira et al. (2007), found that planning that engages with the system was a vital factor in progressing learning for sustainable development across the initiatives reviewed. Examples from other disciplines include exploring relationships between people, places and environments in geography (Moran, 2002) and in linking ecological and social agendas in a multidisciplinary context (Burns, 2011). Systemic thinking in fashion design for sustainability can be explored through fashion's material and immaterial social, cultural, environmental and economic dimensions.

Creative and critical thinking (CCT)

As a discipline, art and design teaching and learning involves practical and cognitive skills building. Curriculum briefs creatively and critically explore accepted practice through experiments at the edges of what is possible and what is of concern in cultural, material, social and aesthetic terms. Through sketchbooks, diaries, prototyping and peer reviews, learners can be invited to think critically about dominant norms, practices and power relationships, and to consider complex ecological and social issues from diverse perspectives (Burns, H. 2011). How learners see themselves and their agency can also be explored through fashion's material dimensions, where a product can facilitate new and unique ways to interact with audiences and extend the scope of the discipline itself. This is in evidence through a wide range of artists and designers exploring sustainability as a critical discourse in public, community and other spaces. Roles are often changed from traditional hierarchies to co-creators or designers as hosts, creating conditions for others to design (Williams, D. 2015). Consideration of the implicit elements of practice, such as relationship building, listening and reflection space, becomes part of the process.

Participation and participatory learning (PPL)

Participatory practice goes beyond studio-based pedagogy that encourages interaction between technicians, tutors, learners and end users. Such dialogic pedagogies create a kind of exchange (Orr, S. & Shreve, A. 2017), a mutual learning process between tutor and student that enriches teaching and learning through a sharing of expertise, experience and curiosity. Whilst distinctive and valued, co-learning in the studio can be expanded to engage with wider constituents who affect and are affected by learners. Participation relates to emancipatory education, where education is a form of praxis, not a product to be consumed (Habermas, J. 1971 in Terry, P. 1997). A number of universities emphasise civic engagement, referencing the radical pedagogies of Friere (Brown, S.G, 2012), but there is a need to ensure inclusive access to learning that includes intergenerational, pluralistic perspectives and voices representing communities, cultures, economies and environments directly experiencing climate and social injustice. This requires consideration of the purpose, goals and criteria for courses and institutions. Careful consideration must be given to needs and risks of participation as well as to access to learning opportunities. Beyond practical elements (briefs, literature lists, etc.) this pedagogy can be explored through self and peer reflection relating to structural inequalities within and beyond the university itself.

Cortese (2005), cited in Burns (2011), suggests including intergenerational, multi-cultural, local and other voices that represent communities, cultures, economies and environments. This can help to mobilise learner participation (Wals, 2009) in the complexities of sustainability. Realisation of this pedagogy includes 'in the field' learning and classroom activities where participatory learning is designed to encourage different kinds of learners to be acknowledged and respected.

Informed decision-making (IDM)

A substantial body of research exists and continues to be developed that underpins fashion design decisions at meta and micro scales. This emanates from a range of disciplines and includes, but is not restricted to, scientific disciplines, which offer vital reference points for sustainability in environmental, as well as social, cultural and economic terms. The Planetary Boundaries framework (Röckstrom et al. 2009) offers a meta reference point to fashion design for sustainability, as does Raworth's Doughnut Economics (Raworth, 2018), that introduces the social floor as a marker for social, alongside environmentally safe spaces. The use of data as a guide for design involves discussion of its source, context and intended application. Some data sets are not transferable in geographic or scale terms, or have been generalised, so they may be relevant to a defined context. Making sense of these to guide practical application that is context-specific includes consideration

of purpose and relevance. The complexity of sustainability has led to a pull towards data to simplify understanding. In practice, this can lead to simplistic or reductionist lists of do's and don'ts which can be misleading. Linking informed decisions to systems thinking and participatory practice helps in looking beyond information at face value. Making sense of these and other reference points involves their interpretation and application in design briefs and/or assessment criteria in ways that really inform decision-making, rather than as a simplistic linking of terms. This pedagogy connects tutors from across disciplines and domains in exchanging knowledge and in techniques of co-learning.

Informed decision-making (IDM)

Fashion is understood as an exploration of a direction of travel, manifestations of emerging ideas of relevance in wearable forms. Trend boards are the ubiquitous tool for design teams to visualise concepts from which they create silhouettes, colour palettes and collection pieces. Futures thinking methodology, however, is less about an iterative process of change, based on what has been, and more about an imagining of what is possible, with reference to research that is interdisciplinary in nature. Future scenario planning offers practical methods for ideation, made more experimental when underpinned by teaching and learning methods that immerse learners in experiential learning to stimulate imaginative ideas. The what (scenario framework) and the how (creating conditions for exploration) enables an extending of timescales, critical in the imagining of what is not currently, but could be (Sennett, R. 2008). Futures thinking works across scales of time, distance and magnitude of change. The practices of speculative design, futures design and scenario planning all offer apt methodologies for fashion design for sustainability, but beyond that, futures thinking can involve improvisation through a range of techniques and mediums, from within and beyond art and design disciplines (Wilkinson, A. & Kupers, R. 2013; Dunne, A. and Raby, F. 2013). In common with other practices of teaching and learning, ethical issues emerge and processes for their consideration must be put into place.

Place-based learning (P-BL)

Place-based learning can be a means to contextualise design within localised social, labour, resource and infrastructure systems. It can be explored through a lens of localism, where place, resources, people and their cultures form the context for

activity in geographical terms. It can also refer to digital and other communities, connected by interests, aspirations and beliefs. Place-based learning can also refer to learning that takes as its focus the relationship between learning and the social situation in which it occurs (Lave, J. and Wenger, E. 1991). A study that starts in a place or with a shared concern can allow learners to gain direct insights into interdependencies at human and non-human scales. As a pedagogy, it offers ways to engage learners in deep listening, direct observation and multi-sensory data capture. Place-based learning can explore sustainability as a set of practices relating to resources (natural, human, etc.) within a system. This contrasts with dominant, globalised, transient production and consumption practices of fashion, where resources are stipulated and then looked for, often without reference to abundance or scarcity, renewability and impacts. Place-based learning explores resources that are in abundance as a basis for design development. This opens up learning that may be culturally or geographically specific, enriched by students and tutors from different locations sharing insights and perspectives.

As a pedagogy, it offers ways for tutors to engage learners in a range of research methods that include deep listening, direct observation and multi-sensory data capture. Reference can be made to the work of Schumacher (1973), Orr (2002, 2004), and Naess (1986), on place, people and resources, and starting to explore relational elements in designing and fashion, and to Fletcher, (2008) and Toth Fejel, K (2019) in linking personal practices to contextual conditions. This can be brought to life through teaching and learning that takes place beyond the walls of the classroom, to involve local communities and geographies, whether through a whole course, a day's activities or woven through elements of lifelong learning and ongoing reflective practices.

Interdisciplinarity (I)

Fashion, whilst a discipline in its own right, involves interdisciplinarity in its professional practice. The structure of the fashion industry and of fashion education, however, means that the distinctive approaches to art and design education, in relation to the sciences, can lead to hurdles when working together. Project-based learning, a longstanding art and design pedagogical approach (Yin, R. 2008), lends itself to the intertwining of ideas from a range of disciplines. A focus on 'the project' can create conditions for a reciprocal process of feedback from actors involved, where educators can invite colleagues and students from other disciplines to consider, respond to and reconceptualise ideas in real-life contexts. The dynamic of live briefs can be stimulating for participants, as long as the 'how' is carefully considered, especially relating to disciplinary assumptions. Here, the 'how' may cross-reference participatory pedagogies, using explicit co-learning and

co-operative enquiry (Heron, J. & Reason, P. 1986), teamwork and role play to surface distinctions and assumptions of participants. Interdisciplinarity is becoming increasingly evident in research and in teaching practice with art and science collaborations. By taking a hybrid approach, connecting learners from different disciplines, cultures or locations can encourage an understanding of multiplicity and encourage self-reflection, as well as adding new teaching and learning practices to a tutor's repertoire.

Learning through making (LTM)

Activities of making involve technical, aesthetic, ergonomic and creative skills, alongside reflexivity that connects personal, political and professional perspectives on skills development. There is, perhaps, no greater place of connectivity between surface, deep and implicit structure than in this realm. Fashion making involves a consideration of how background, culture and values interact to shape our knowledge and perceptions and those of others (UNESCO, 2002).

The teaching and learning of technical, practical, skills-based knowledge is critical to vocational readiness, as well as contributing to disciplinary knowledge and the cultural relevance of products. Material and object analysis is used in exploring historical, symbolic and other meanings, and how they change over time. Object, craft and other making-related pedagogies can contribute to identifying gaps and omissions in teaching, most notably in historical and cultural sources and reference points in curriculum and discourse. The studio has long been recognised as a space for experimentation, for unexpected outcomes to inform knowledge and understanding, and for peer-to-peer assessment. Through deep consideration of the subject matter, tutors, technicians and students can become condition creators as well as form makers (Williams, D. 2019). The creation of learning networks can also help to redistribute and decentre hierarchical power structures. The ethical connection between traditions of making, communities of practice and non-Western sources of knowledge can be made explicit through exploring tradition in relation to and beyond industrial contexts.

CHAPTER 7.

Scales of
Transformation

The universities involved in FashionSEEDS, and wider university models in the Northern and parts of the Southern hemisphere, are based on ideas of modernity, rationality and neo-liberal thinking. Thus, free market economies as seen as central to resolving concerns relating to wealth, health, climate and social justice, supported through law, politics and faith in economic growth as the indicator of progress. Fashion education is bound up in this thinking and many sustainability initiatives are wedded to its principles.

It is widely acknowledged that current activities relating to sustainability in fashion are not adequate in preventing fashion's contribution to runaway climate change, the irreparable devastation of ecosystems, and that the social consequences of climate change and biodiversity loss exacerbate poverty, exclusion and inequality. The imperative for change in worldview is clear and the appetite for change is increasingly apparent, albeit suppressed by those holding on to outmoded practices they have much invested in and a partial, short-termist, view of success that does not factor in the deficit it is causing in wider human, societal and planetary terms.

Teaching sustainability involves grappling with the tensions between short and long-term wellbeing and the human predisposition to consider both of these elements, described by Roman Krznaric in his narrative on being a good ancestor (Krznaric, 2021). These and other ideas, theories and philosophies can inform an understanding of how we can shift our understanding and build agency in re-conceptualising practices, relevant to 21st century living. We cannot underestimate the task at hand, the range of emotions and capabilities involved. A critical consideration of what is going on, identifying a direction of travel, and taking active steps can be a 'journey of gratitude, grief, interconnection and ultimately transformation.' (Klein, 2007) How we, as tutors, guide learners and each other, is critical in this journey of transformation.

Through the first decades of the 21st century, discussion has been taking place across disciplines and levels of society, to reconsider markers of success and recognition of value (Laudes Foundation, 2020; Dasgupta, 2021). These examples chime with new epistemological and ontological understandings of design (Walker, Manzini, Wylant, 2008). The co-inquiry taking place through FashionSEEDS is part of this discourse and how tutors can bridge current and evolved markers of success. Transformation design offers concepts, theories and practices that involve changing not only the materials and garments of fashion, but proactively transforming systems and organisations (Burns, Cottam, Vanstone, Winhall, 2006) and people themselves. Changes in the intention, goals and rules of a system necessitates change in its markers of success.

Whilst designers have traditionally been identified as 'problem-solvers', the challenge for tutors is in setting a brief, teaching and assessing that goes beyond 'solutions' based on a current issue or challenge, but supports designing as a means for continually responding, adapting and innovating possibilities for change in a world that is in flux. Assessing a re-modelling across levels from macro to micro, from systems to garments involves assessing the characteristics of a submission, as well as its technical, aesthetic and feasibility dimensions.

The six characteristics of transformation design set out in the Design Council's Transformation Design Paper (Burns, Cottam, Vanstone, Winhall, 2004) are familiar reference points in design for sustainability. They encompass defining and redefining the brief, collaborating between disciplines, employing participatory design techniques, building capacity rather than dependency, designing beyond traditional solutions and creating fundamental change (Burns et al., 2006). However, reference points are needed in marking the continuum from current to transformed practice.

The literature on transformation design describes levels of change that traverse current economy-centred to earth-centred paradigms. A simple characterisation of change towards transformation can be summarised as change in behaviour and practices, understanding and thinking, and underlying beliefs. Taking a range of references, a pattern emerges of two or three key elements of change, with first-order change as adjustments within a system and second-order change as changes to the system (Watzlawick, Weakland, and Fisch, 1974). A more detailed classification of change is explored as alpha change, related to changes in perceived levels of variables within a given paradigm; beta change, related to changes in standards and perception of value within a given paradigm; and gamma change, relating to the change of the paradigm itself (Golembiewski, Billingsley, and Yeager, 1989; and Resnick, E. 2019). The indicators between levels of change relate to the change itself. First order change is about change within wider norms, second order change is a paradigmatic change, which means a change in the metarules (the rules of the rules) of the system needs to take place (Sangiorgi, 2011). Sterling codifies levels of change as first order, corresponding to the level of concepts; second order, considering a deeper level of values and beliefs; and third order, the most challenging as it considers paradigm and worldview. To each of these levels, Sterling attributes learning which evolves from 'conformative' to 'transformative' (Sterling, 2010; table 1). These levels of change are characterised as 'hard' system approaches, in first order change; 'soft' system approaches, in second order change; and whole systems thinking as transformational in third order change (Sterling, 2003, p.12).

Orders of change and learning	Seeks/leads to:	Can be labelled as:
First order change (cognition)	Effectiveness and efficiency	'Doing things better' Conformative
Second order change (meta-cognition)	Examining and changing assumptions	'Doing better things' Reformative
Third order change (epistemic learning)	Paradigm change	'Seeing things differently' Transformative

Table 1. Levels of learning, Sterling (2010).

As can be understood from the distinctive, whilst connected, approaches outlined, there is a need to recognise activity at a range of levels, acknowledging accessibility and limitations of some levels and the challenge and potential of paradigmatic change to shape and influence change across all scales. For a university, this entails change in core assumptions and worldview, alongside change at course, community and individual levels, i.e. change in philosophy, mission and purpose, culture and underlying beliefs as part of a change in course units and learning outcomes.

In taking a systems-level approach, a scale of change framework can be designed to recognise the impact of activities and products, applicable in education and industry settings (Williams, 2015). This is important in recognising incremental adjustments and replacement of parts through to radical re-conceptualisation of fashion, the feasibility and impacts of different activities. This is useful as it offers designers a wide field to be creative, and to participate in the design and development of new configurations that may require changes in infrastructure, technologies, values and behaviours (Bhamra and Lofthouse, 2007) realised as garments, services and models for business. As well as identifying markers of change, navigating between learning levels (Sterling, 2010) is a critical element for tutors to consider. Drawing from disciplines in ecology and philosophy, an iterative process of change and learning levels is informed by Gregory Bateson's work (1972) on orders of change. Bateson describes three orders of learning and change as improvements in the learning capacity. Sterling (2003, 2010) argues that as we progress through learning levels, the act of learning becomes more difficult because it openly challenges our view of reality. This is borne out in the testing of scales of change (Williams, 2015).

Considerations in transformation include power, control and equity, thus assessment of transformation must also include evaluation of relationship dynamics and the creation of, or at least understanding of, the agency of all participants and their access to knowledge and autonomous decision-making processes. Congruent with sustainability, transformation does not have an end

point, but is part of an ongoing process of change within dynamic, living systems.

Applying parameters of transformation means critical reflection to revise previously unquestioned perspectives and assumptions, leading to more open, permeable and better justified perspectives (Cranton in Landgren and Pasricha, 2015). However, in universities and in businesses, questioning systems whilst working inside them is increasingly at odds with the speed and pace of activity, and expectations of time-poor students, tutors and businesses. If the ambition is to cultivate minds capable of creating new possibilities (Stern, 2006), this means not just learning through education, it requires learning within educational systems (Jones et al., 2010), transforming student learning and our own learning as educators, businesses and citizens (Williams, 2015).

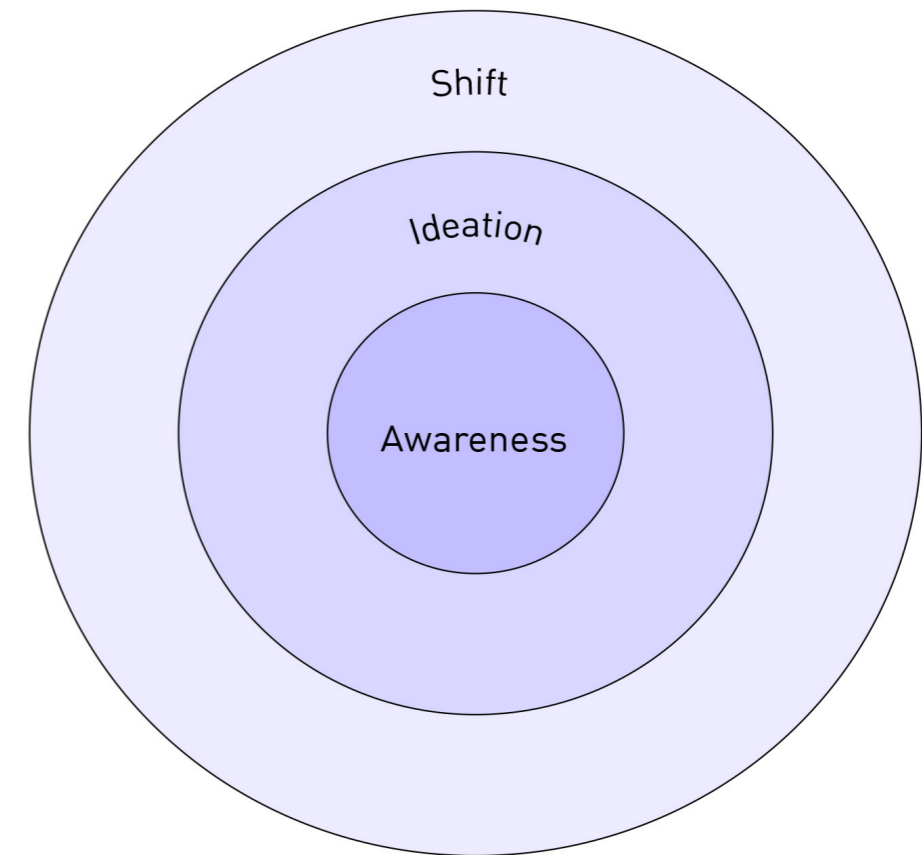
FashionSEEDS draws together a body of tacit knowledge, research and teaching experience, from working with students and industry partners. The project team has shared and exchanged their own research and resources, supplemented by that of tutors from each of the universities and through data gathered from tutors in 73 locations across the world in the first phase of the project. This includes the sharing of an initial scale of transformation assessment tool, which has been developed and tested (Williams, 2015). It acts as an initial reference point in considering how we recognise a journey of change. This prototype assessment tool, based on transformation design and education for sustainability methodologies (Sterling, 2003; Bateson, 1972; and Pepper, 1999) sets out a novel matrix for mapping activity towards transformation and plots evidence against teaching and learning pedagogic practices. The imperfect fit between qualitative signs of change and the use of numerical measurement is recognised; its ease of use is however, a factor of importance in the useability of the tool by tutors. The project's experimental workshops with tutors and students have enabled further testing of the scale, and new iterations are expected to evolve through tutor-led use of the tool.

Scales of Transformation

Level One: Awareness
Teaching about sustainability, identifying and recognising problems, caring for those affected by current practice and gathering evidence of the situation. Awareness leads to actions being taken to mitigate harm. This level is characterised by a motivation towards engagement, participation or activism, which can save lives, species and ecosystems. The value of these actions is recognised, whilst acknowledgement must be given to the fact that this change is not sufficient on its own, to live within planetary boundaries and equity in fashion. Effect often follows awareness and affective pedagogies address this aspect of human experience as well as providing motivation for change.
Level Two: Ideation
Teaching for sustainability encourages ideation to create new materials, products, and services that factor in environmental, social, economic and cultural cost and value of fashion. This level is characterised by product innovation that takes place within current world views, and evidence of adaptation to changing circumstances created by human-induced inequality and climate change. Ideation for adaptation is recognised as important in the production of novel design and production methods, but must be acknowledged as an incomplete story of change that is not characterised as modelling interdependence with nature. Problem-based learning and innovation processes stimulate new thinking and a questioning of the status quo, providing reconceptualisation of processes and underlying principles of design.
Level Three: Shift
Teaching as sustainability in action, played out in the practices of teaching and designing that recognise and display human ecological identity requires a shift in action as well as thought. For this to take place, change must take place at levels of consciousness of our interbeing (Hanh, T N. 2017). This shift in consciousness recognises our ethical failure in the climate, personal and societal crisis. Translating a shift in consciousness to a shift in actions and interactions as a form of collective agency involves no longer accepting the practices of an extractive society and instead practising life-sustaining cultures, committed to the health of the world.

The scales of transformation are offered as ways to register the necessary changes that lead to a shift in the fashion system. Points of intervention in what, how and with whom educators teach and learn can be identified in the Tutors'

Toolkit. Educators from across courses, locations and fashion education system levels can explore what is feasible and relevant for their work. The ambition of the scales is to recognise the value of acting at each level, within an understanding that the imperative for deep change requires activity at all of these levels.



Williams, D. & Stevenson, N. (2012) (unpublished.)

	Level One: Awareness Change within and adjustments to current system	Level Two: Ideation Significant change in how we view and do things	Level Three: Shift Accepted, shifted perception of the world that transcends business as usual (BAU)
System Interventions	Learnt Responses Within current courses and university structure	Critical Responses Evolved courses, revised structures	Transformation Reconceptualisation of why, what, how, and with whom we teach and learn
Futures thinking	An incrementally better, improved future	A different future from current path	A future as yet unimagined or predicted
Critical and creative thinking	Assessing current system and coming up with improvements	Developing alternative systems that reconsider power structures and change them	Creating a new system to overwrite BAU; alternative interactions take place
Participation and participatory learning	Bringing in new stakeholders to existing system	New participants and stakeholders help create new systems	Work is shared, owned and created in a totally different way
Systemic thinking	Whole systems considered rather than one aspect	Systems are overhauled	New systems replace BAU
Interdisciplinarity	Cross-discipline partnerships and knowledge used to improve the system	New partnerships and interdisciplinary knowledge begin to change systems	New partnerships and disciplines replace BAU and change the system
Informed decision-making	Knowledge/data gathered to identify and act at identified points	Holistic knowledge and data used to permanently change the system	New perspectives generate new knowledge and data
Place-based learning	Location of activity considered, adjustments relevant to place and people	Location is integral to activities with a feedback loop between place and activity	Location-activity relationships are transformed; relationships build resilience in both
Learning through making	Material, shape and form are considered along with related histories	Origins of material craft and use information	Meaning and making are intertwined in an ecological context of matter and form

Adapted from Williams, D. & Stevenson, N. (2012) (unpublished.)



Photo: Natalie Higgins working in the studio. ©Alys Tomlinson

CHAPTER 8.

Capabilities,
competences
and skills

There is a substantial body of discipline-specific and cross-disciplinary research relating to graduate capabilities, skills and competencies, in preparing for lives and livelihoods beyond study. Many universities undertake audits of where and how graduates apply their learning, and attributes are recognised according to sectors, industries, governments, communities and education systems. The European Qualification Framework (EQF) (EUCEN, 2008) classifies knowledge as the outcome of the assimilation of information through learning; competencies as the proven ability to use knowledge, attitudes and personal development; and capabilities and skills as the ability to apply knowledge and use know-how to complete tasks and solve problems. In taking a transformational approach to education, this layering of definitions can be inverted to prioritise a capabilities approach (Sen, A. 1999), where agency, as well as the ability to create, solve and dissolve complex problems, goes beyond the application of information through learning. Fashion education, with its imaginative and technical elements, aligns well to Sen's work that offers a philosophical and practical approach to sustainability in socio-economic terms. By exploring the relational aspects of capabilities to the four pillars of sustainability, tutors can map and evaluate learning experiences according to learners' ability to take part in education, as well as to produce outcomes. Skills become recognised as the interpretation of knowledge and practised ability to act and interact with resources (people, materials, etc.) enabled through capabilities. As with capabilities, acquired skills must be considered as an ongoing process, adaptable and evolved as part of a transformation of self and the fashion sector, and undertaken in and beyond higher education, as part of lifelong learning. It is important to be able to identify and assess skills and their application, through conceptual and applied projects and through in-work training. Competencies then encompass an aptitude for learning and its application, drawing on capabilities: all in relation to an ability to interact with wider social, cultural, economic and ecological systems. This all applies to tutors as learners, as well as to student learners, where tutors exchange ideas and their application with graduates, each contributing to systemic change.

A capabilities approach to fashion design recognises the interdependencies between self, society and economy in terms of their direct relevance to the well-being and freedom of people, their indirect role through influencing social change and their indirect role through influencing economic production (Sen, A. 1999).

This socio-economic approach, whilst not explicitly referencing the biosphere level of the fashion education system, can be cross-referenced with a discourse on capabilities in education for sustainability, to see it as taking place within an ecological paradigm. Redman, C. and Wiek, A. (2012) describe capabilities as 'a functionally linked complex of knowledge, skills, and attitudes that enable successful task performance and problem solving'; applied to competencies in sustainability, these are 'complexes of knowledge, skills, and attitudes that enable successful task performance and problem-solving with respect to real-world sustainability problems, challenges, and opportunities' (Wiek et al. 2011b: 204). Sen does not subscribe to listing capabilities, seeing them as emergent, relational and in flux. Tutors have to navigate a path between attendant learning,

which is responsive, social and experienced, and structured learning, which is formalised, validated and written down. Connecting these approaches can help tutors in defining and assessing their own learning experiences, as well as helping students in deepening and applying their learning.

The relational aspects of capabilities, competencies and skills are part of an ever-evolving process of learning that takes place in formal and informal settings across our lives. Teaching and learning in the context of BA and MA courses in fashion design for sustainability is part of a systemic phenomenon that is inherently relational, emergent and recursive, involving multiple logical levels. Learning becomes an effective act of change toward sustainability when it is reflective, experimental, experiential, investigative, participatory, iterative, real-world and action-oriented (Sterling, S. 2009). A Delphi study was carried out prior to the project commencement, to establish a construct for fashion education and sustainability. This was undertaken by members of the project team with tutors from wide-ranging locations and offers an example of a capabilities approach to fashion design for sustainability. This and other reference points used in assessing learning can be triangulated with the scales of transformation.

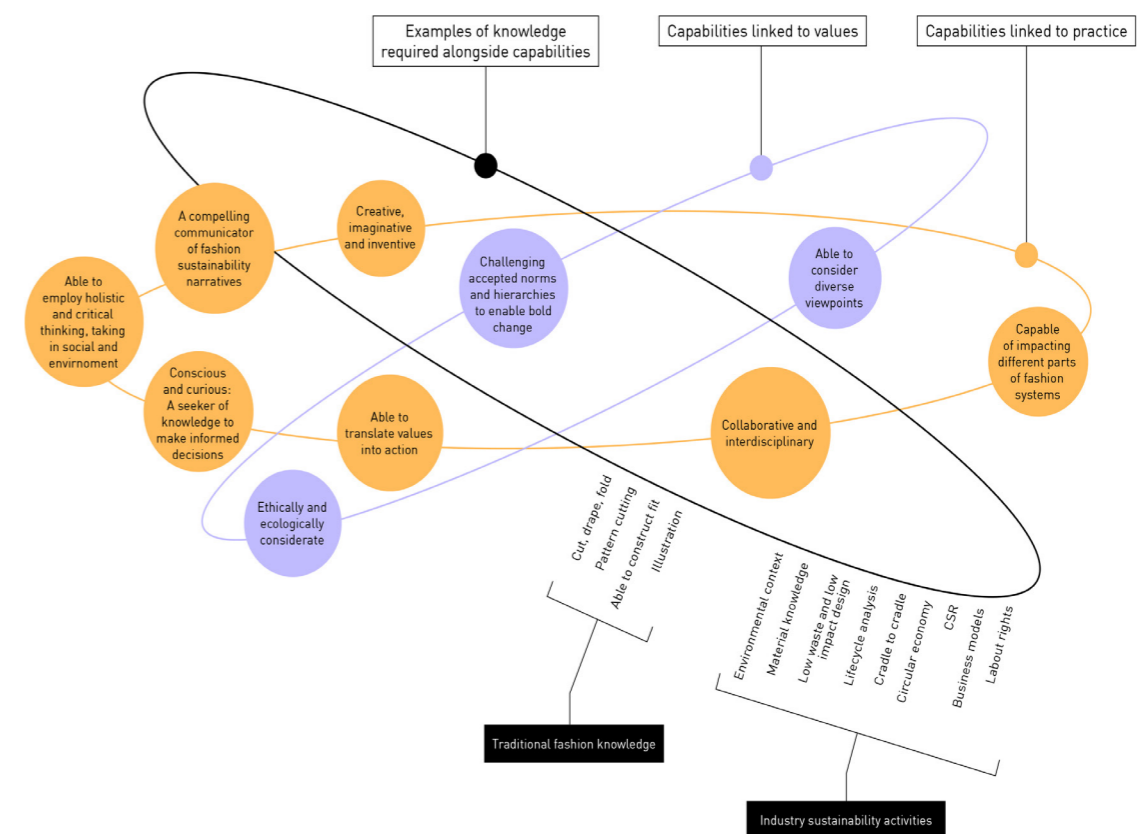


Figure 5. Capabilities Approach (Williams, Toth- Fejel and Stevenson 2018)

Case Study: Comparing and applying a taxonomy of learning

This case study explores literature relating to ways of learning, drawing on well-recognised reference points and their relevance to FashionSEEDS. Drawing from works on education for sustainability (Bloom et al., 1956; Wiek 2011), it is possible to cross-reference approaches to the development of core knowledge, understanding, skills and abilities in the curriculum in fashion design for sustainability. The references explored refer to a process in continuous evolution of a specific didactic context, where the goal is not only the improvement of learning outcomes, but also the enrichment of the teaching experience as an opportunity to develop transversal skills. By adhering to these core needs, it is suggested that a transformational level of learning can be achieved (Sterling, 2010: 25). Such a transformational level requires more radical approaches to shift the ways we look at the world, the affect element of learning. By exploring a taxonomy of learning, it is possible to identify approaches that can aid tutors and learners in achieving a more epistemic learning, to envision change and take part in a shift of paradigm.

A taxonomy of learning

Benjamin Bloom was a psychologist and pedagogue who authored a taxonomy of learning objectives, Bloom's Taxonomy, that Bloom and his collaborators built on the basis of empirical studies carried out in the United States in the mid 1950s. The taxonomy describes a systematic approach to assessing learning within the cognitive domain that was originally developed as part of a larger system comprising affective and psychomotive domains (Krathwohl, Bloom, and Masia, 1965; Bloom et al., 1956). Even though other similar taxonomies have been proposed (Anderson, J. R., 1983; Ausubel, 1968; Merrill, 1983; Biggs and Collis, 1982), Bloom's taxonomy has remained a dominant means to structure and assess curricular learning outcomes across education levels and geographies.

The taxonomy consists of six hierarchically ordered levels identifying lower to higher-level cognitive processes in learning. Based on the original taxonomy, a revised version has been proposed (Anderson, L. W. et al., 2014; Krathwohl 2002). In the following, the wording used in the revised version will appear in brackets. It is worth noting that wording has changed from nouns to verbs and thus from a passive to an active conception of the learning situation.

A first representation of Bloom's Taxonomy, created in 1956, reported the different learning objectives typologies hierarchically, followed by actions that substantiate the performance related to the learning objectives, and finally, products that can be seen as the results of such performance.

Bloom's pyramid was created following a reworking of the taxonomy's first edition. At its base, the first level of learning objectives relates to knowledge, the next to comprehension, then one connected to application. Bloom's pyramid (fig.7) can be as an evolving model that can be used as a tool to plan gradual progression according to changing learning contexts. In 2001, Krathwohl and Henderson proposed a revised version of the pyramid, which focuses on learning outcomes. It introduces some important conceptual differences: types of learning

are identified with verbs instead of nouns, the word 'knowledge' is substituted by 'remember', and the top noun of the original pyramid, 'assessment', is replaced by the verb 'create'.

Changing nouns into verbs is significant, as the taxonomy reflects different forms of thinking that are here considered as an active process. This changes how tutors approach the teaching and learning experience. Using verbs gives tutors a different perspective on students' performance: students are dynamic entities in conducting the actions described by the corresponding verbs. This is coherent as tutors expect students to be able to perform these actions.

Substituting 'knowledge' with 'remember' highlights that knowledge is an outcome of thinking, not a form of thinking per se. Remembering, as an action-word, describes the cognitive processes by which thinkers confront and work with knowledge.

There is another important difference between the two pyramids: at the top of Bloom's pyramid, there is 'evaluation'; in Krathwohl and Anderson's pyramid, there is 'create'. Here, the topic of the learning objectives being connected to creative abilities becomes important in a completely different way from Bloom's perception. At the top of the pyramid, people generate new ideas, create new products, or build new points of view. This change contemplates creative thinking as a more complex form of thinking than evaluating: a person can evaluate without being creative but, on the contrary, creative thinking requires some level of evaluation.

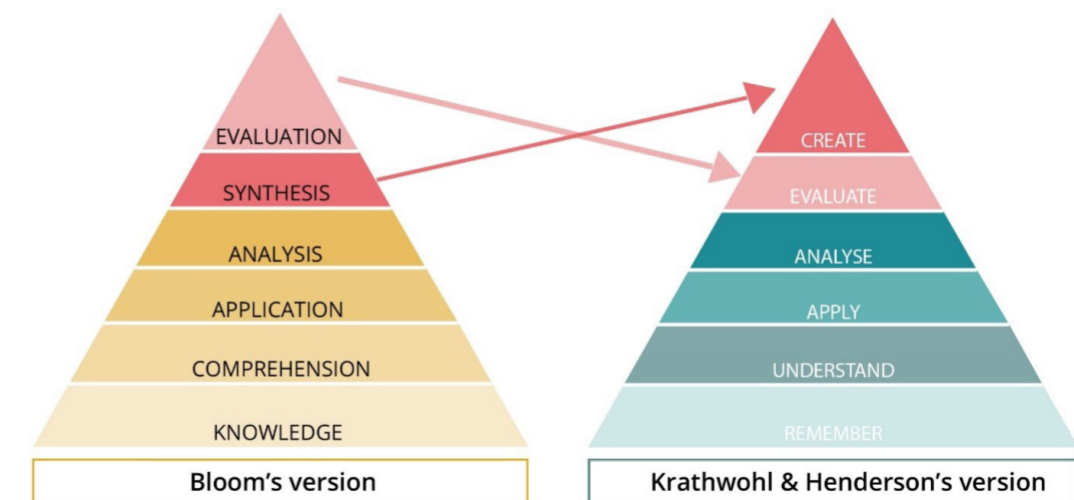


Figure 6. Comparison between the original version of Bloom's pyramid and the one reviewed by Krathwohl and Henderson. Source: METID - Politecnico di Milano.

1. Knowledge [remember] involves retrieving relevant knowledge from long-term memory and can be associated with recognising and recalling (Anderson et al., 2014: 66)

2. Comprehension [understand] involves building connections between new knowledge to be gained and prior knowledge through existing schemas and cognitive frameworks based on interpreting, classifying and comparing among others (Anderson et al., 2014: 70)

3. Application [apply] involves procedures to perform exercises or solve problems and consists of two cognitive processes: executing and implementing (Anderson et al., 2014: 77)

4. Analysis [analyse] involves breaking material into its constituent parts and determining how parts are related to one another and to an overall structure through cognitive processes such as differentiating, organising and attributing (Anderson et al., 2014: 79)

5. Synthesis [evaluate] involves making judgments based on criteria and standards and includes the cognitive processes checking and critiquing (Anderson et al., 2014: 83)

6. Evaluation [create] involves putting elements together to form a coherent or functional whole and includes the cognitive processes generating, planning and producing (Anderson et al. 2014: 87)

For one of the members of the FashionSEEDS team, Wiek et al.'s *A paper exploring competencies in sustainability through a reference framework for academic programme development* (2011) has proven useful for engaging in paradigmatic curriculum changes, with reference to key competencies. In order to classify the skills asked for in education related to sustainability, Wiek, Wythcome and Redman propose five key competencies (Wiek et al., 2011). These have been identified and structured based on a large-scale review that synthesises substantive contributions into a coherent framework of sustainability research and problem-solving competence (Wiek et al., 2011, pp. 203).

In a later revision of the framework (Wiek et al., 2016), some of the key competencies have been further elaborated on; these appear in brackets in the below competence description. Having used the framework to analyse the existing curriculum and to propose new initiatives at Design School Kolding, Hasling and Ræbild have found it appropriate to structure competencies into a hierarchical order that considers the cognitive and collaborative complexity of the competencies (Hasling and Ræbild 2017). The five competencies are listed below for reference (interpretation of Wiek, Withycombe, and Redman, 2011: 207-211).

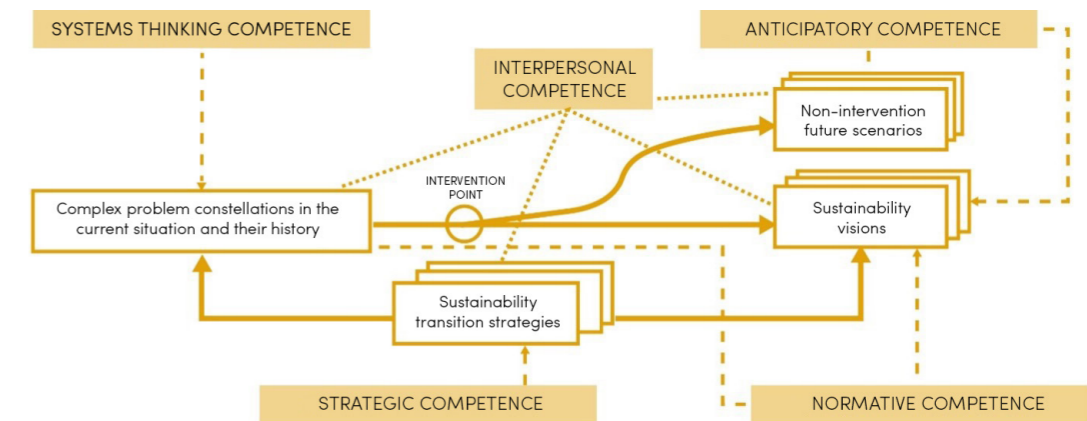


Figure 7. Wiek et al., 2016 (Diagram produced by Karen Marie Hasling, Design Skolen Kolding-DK)

Normative [values thinking] competence is the ability to collectively map, specify, reconcile and negotiate sustainability values, principles, goals and targets (including) first, to collectively assess the (un-) sustainability of current and/or future states of socio-ecological systems and, second, to collectively create and craft sustainability visions for these systems).

Interpersonal [collaboration] competence is the ability to motivate, enable, and facilitate collaborative and participatory sustainability research and problem-solving.

Systems thinking competence is the ability to collectively analyse complex systems across different domains (society, environment, economy etc.) and across different scales (local to global), thereby considering cascading effects, inertia, feedback loops and other systemic features related to sustainability issues and sustainability problem-solving frameworks.

Anticipatory [futures thinking] competence is the ability to collectively analyse, evaluate and craft rich 'pictures' of the future related to sustainability issues and sustainability problem-solving frameworks.

Strategic [action-oriented] competence is the ability to collectively design and implement interventions, transitions, and transformative governance strategies towards sustainability.

In their latest revision, the authors have further added a sixth competence, the **Integrated problem-solving competence**, that links to the ability to 'apply different problem-solving frameworks to complex sustainability problems and develop viable solution options' in a transitional and transformative manner (Wiek et al. 2016: 252).

Multiple other scholars and organisations have proposed modified, similar or alternative taxonomies, exemplified in the UNESCO report, *Education for Sustainable Development Goals: learning objectives* (UNESCO 2017) and Giangrande et al., (2019), and for professional practice, Perez Salgado, Abbott, and Wilson (2018).

A taxonomy of learning

The two taxonomies inform curricular sustainability building in diverse ways; Wiek et al.'s framework proposes what students should learn, i.e. having focus on the content, and Bloom's taxonomy proposes the cognitive levels in which this should happen, i.e. having focus on the pedagogic means in achieving this. A space stretched by the taxonomies on two axes can be used to illustrate the coherence between intention and outcome and to map curricular progression (see figure 9). The sixth key competence, integrated problem-solving, focuses on transition and transformation and the sixth level in the taxonomy, create, emphasises a constructing element. Along these theories of learning and progression, Scales of Transformation can be used indicatively in the cross-over of taxonomies.

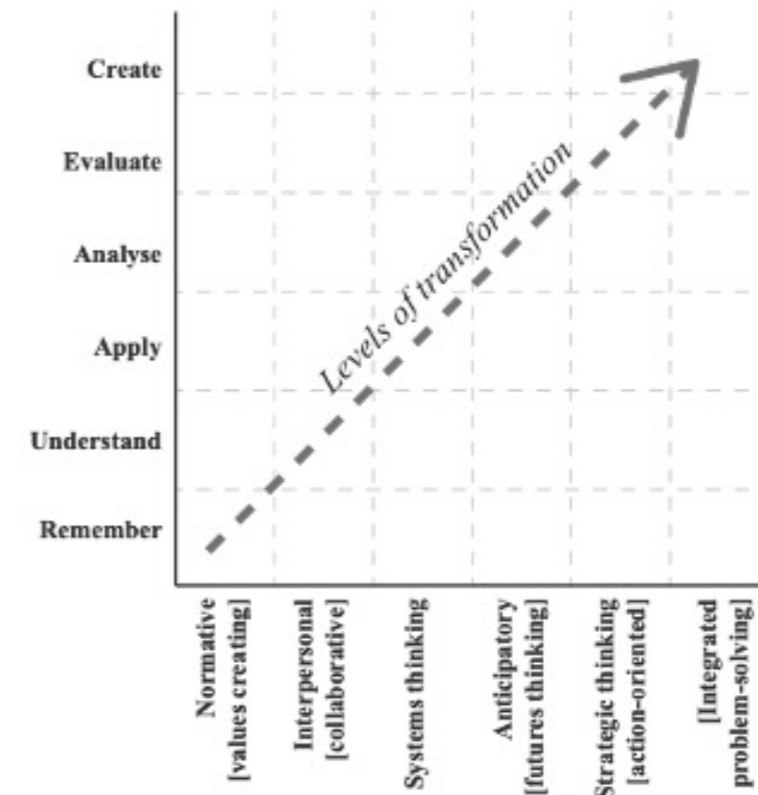
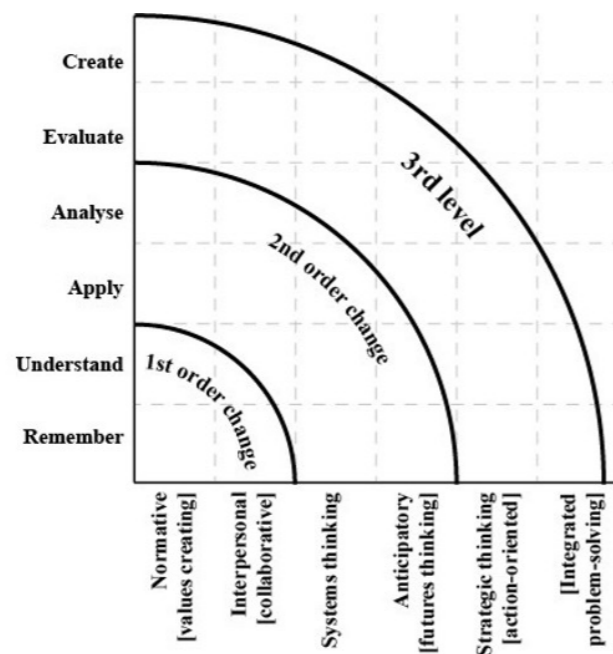


Figure 9. A combined framework incorporating Bloom's Taxonomy of learning (1956, 2002), Wiek et al.'s Sustainability key competences (2011, 2016) and Sterling's (2010) Levels of transformation.

The progression in both hierarchies, with the sixth key competence, *integrated problem-solving*, focuses on transition and transformation, and the sixth level in the taxonomy, *create*, emphasises a constructing element creating a link to transformative learning. In figure 9, the space stretched by, respectively, Wiek et al.'s framework and Bloom's taxonomy, can be considered in relation to levels of transformation. Thus, in curriculum design, moving rightwards and upwards should further transformative learning processes.

CHAPTER 9.

The Fashion
Tutor as the
Sustainable
Self

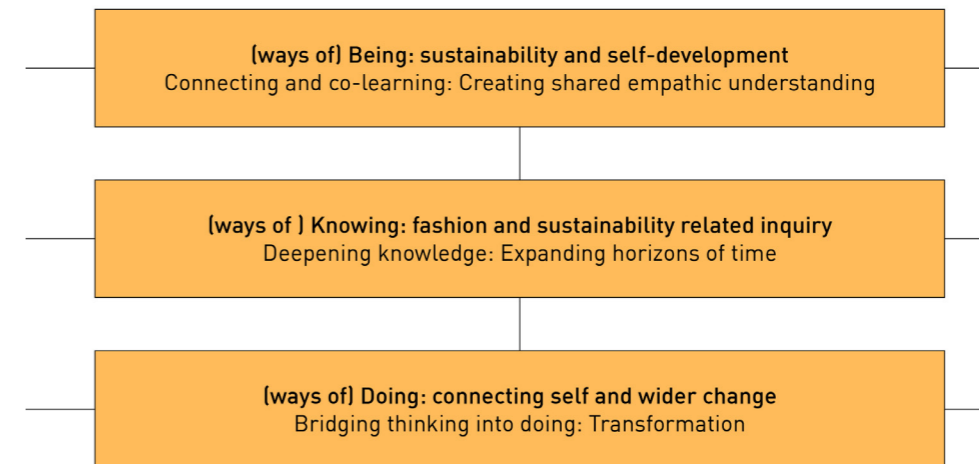
When learning is understood as the active effort of changing towards sustainability, tutors recognise their roles as creators of learning experiences that help facilitate transformation with and through others. In considering their own practice and that of peers, as well as in developing learning situations that expand the potential for transformative experiences, reflective and critical thinking are important elements of educational practice. This can take a range of forms, such as transformational investigation questions (Sterling, 2009, pp.82) that tutors can ask themselves, each other and their learners.

- Holistic: *how do parts relate to each other and what is the larger context here?*
- Critical: *why are things the way they are, whose interests do they serve?*
- Appreciative: *what is good, positive and already works in what is happening here?*
- Inclusive: *who/what is represented, heard, listened to and engaged in participation?*
- Systemic: *what are or might be consequences and effects of what is taking place?*
- Creative: *what imaginative, innovative and radical approaches might be required?*
- Ethical: *how are matters of care considered, what processes of consideration are included in human and beyond human terms?*

A clarion call made by tutors in the FashionSEEDS team and from findings gathered from a wider group of tutors in 73 universities (see Benchmarking report) was a plea for space for reflection, deliberation and sharing, to be supported by – and to be supportive to – other tutors. They seek a chance to voice and share matters of concern as a means to create change within and beyond themselves. For this reason, a simple-to-use outline for tutors to engage in supportive reflection has been created, to be able to consider sustainability from a personal and professional perspective, and to do so with others. This heuristic draws on the researchers' own practices, identified in the longitudinal co-inquiry reflection process, through collating and coding recordings of participants. The process has been iterative, open and 'light touch', using verbal and text-based reflections, captured and recorded for use in the project. The findings were analysed alongside sustainability scholarship (Murray, 2011, Sterling, 2009.) and a range of coaching techniques. From the findings, it became apparent that there was an appetite for semi-structured, open, adaptable, flexible ways to recognise and give time for a co-learning process of reflection and action. The Fashion Tutor as Reflective Practitioner and Co-inquirer seeks to engage tutors in practices of collaboration, co-learning and self-reflection. This does not replace other support practices and processes that tutors are encouraged to engage in to support and care for self and others. From the findings, three guides have been created as follows:

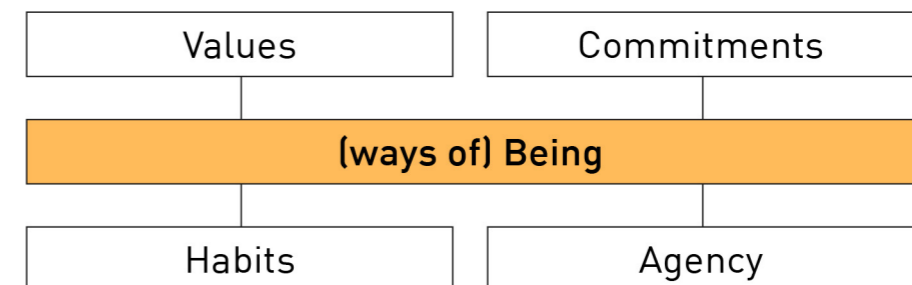
Three Ways of the Sustainable Self

The fashion tutor as a sustainable self is made up of three elements that can be engaged with separately or in tandem.



(Ways of) Being

A mutual learning process where two people come together to develop their own sense-making and sustainability development via discussion, decision-making and self-care.

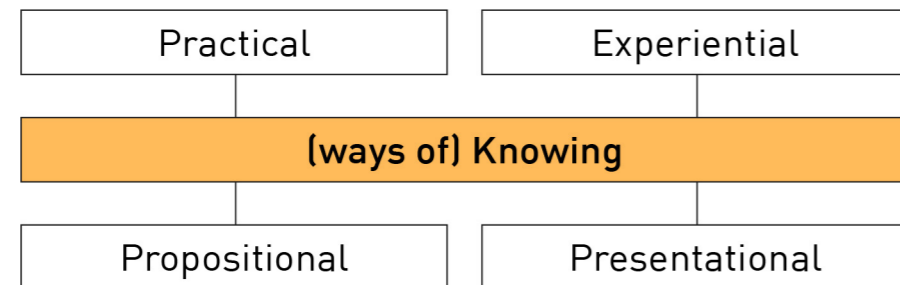


Through project activities, it soon became evident that tutors respond positively to opportunities to share experiences with each other, and that change happens more quickly when they work together. This might seem obvious to tutors reading this publication; however, there has been a lack of opportunity for tutors to engage in peer-to-peer sharing of teaching practices in fashion design for

sustainability. A 'ways of being framework' offers a shared learning experience, in a diary format, for two people to engage in listening, reflecting and taking action that aims to help to sustain them, develop their sustainability thinking and support them as they teach fashion design for sustainability.

(Ways of) Knowing

A co-learning process, based on a co-operative enquiry methodology, where a small group of tutors explore an area of shared enquiry through listening, reflecting and taking action.



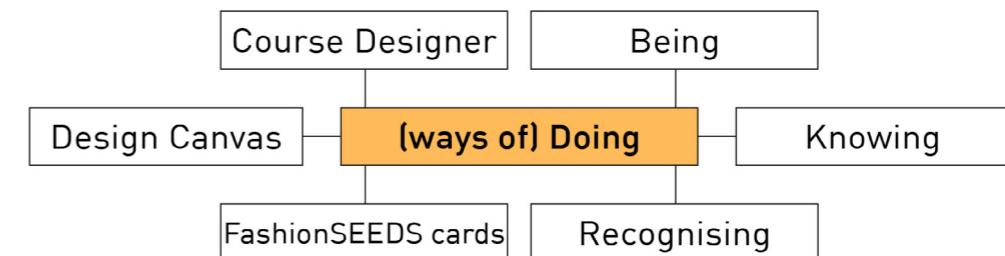
When a tutor seeks to expand their understanding of fashion and sustainability, they are often faced with a need to apply for funding, to undertake research, 'buy out' some of their teaching hours and 'buy in' time for collaborators. This can be time-consuming; funding is often hard to come by and vast numbers of people apply for a handful of grants. An alternative can be to undertake inquiries in time that you can make available within your role. This can be challenging, as the role of a tutor beyond direct teaching hours is often taken up by tasks and duties relating to student and institutional needs, including pastoral care, recruitment, assessment and course organisation. The 'ways of knowing framework' draws on a co-operative inquiry methodology, tried out in the project by partners and participating tutors. It references *By the Fire* a project led by Liz Parker, and Lizzie Harrison in 2016, <https://www.by-the-fire.co.uk> and other learning design programmes.

The practice of co-operative inquiry is a way of working with people who have similar concerns and interests to yourself to understand the world and develop new and creative ways of looking at things, and to learn how to take action to change things and find ways to do things better (Heron and Reason, 2001).

This practice is well suited to sustainability exploration, as it is participatory and expands research beyond theoretical ideas that are seldom tested on people in specific conditions. Instead, it offers a means to help tutors to explore and identify ways to act to change things in their lives and work.

(Ways of) Doing

The FashionSEEDS platform is designed to offer individuals and groups 'ways of doing'. Its navigation is designed to support reflection and action by tutors themselves and with learners, adapting, deconstructing, reconstructing, testing and applying ideas based on the content on the platform. The platform layout is designed so that it can be approached in multiple ways, thereby acting as a guide that can be referenced, adapted, applied and used as a means to gather teams together in transforming what it means to teach and learn fashion in the context of our times.



End note

This document outlines the framework for the FashionSEEDS platform (resource repository). Descriptions are given to the core elements of the framework and the approach being taken to navigation design. Through an analysis of a second phase of research, the findings outlined in the Benchmarking Report (Williams et al., 2019) have been further explored to ensure that the resources meet the needs of tutors in contributing to societal needs in relation to regional and worldwide imperatives. Methodologies have been employed to research and to resource testing that are participatory by design, as part of the ambition to co-learn and co-create resources with and for tutors, impacting learners, the sector and wider socio-economic and socio-cultural understandings of the ecological context within which fashion activities take place.



Photo: Knitted top by Elizabeth Kate Rudrum, 2016. ©John Sturrock

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