

EXPLORING A NEW PARADIGM OF SUSTAINABLE FASHION DESIGN EDUCATION BASED ON POST-HUMANISM

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ABSTRACT

The current sustainable design is criticized for its dichotomous thinking, and some minority social groups were not considered. Following a Post-humanism perspective, this study aims to reflect on the paradigm of current sustainable design education of fashion from the perspective of dissolving dichotomous thinking. An empirical study was conducted in successive four years of a postgraduate programme in fashion design, which was used to construct IPER's model of sustainable design education. The researchers summarised and analysed existing approaches in the field of sustainable design higher education, and constructs a pedagogical approach based on the Self-IPER system. The research programme chooses three styles of clothing as subject, family matching clothing, design for disabilities, and transformable design for working women. 265 students were invited to participate in the programme. They were guided to innovate under the concept of sustainable design, then completed their virtual designs, followed by public presentations with feedback from teachers and students, and completing their work after self-reflection process.

The study explores a model of integrating the understanding of sustainable design into practice reasonably. The IPER model provides a useful attempt to improve the paradigm of sustainable design education and makes it more feasible to train and deliver responsible fashion designers for the apparel industry. Feedback from the follow-up study suggests that students in the programme have consciously understood sustainable design in their careers. The study suggests that in the post-humanitarian era, sustainable fashion design should not be merely a buzzword or a necessity for the few. Instead, sustainable fashion design should reach the hearts and minds of every fashion stakeholderr.

1. INTRODUCTION

Fashion industry is a sector with relatively high productivity and always trendy. Product design is considered to be an important section in the supply chain of fashion industry (Niinimäki and Koskinen, 2011). Researchers agree that the notion of sustainability should be embedded in the design of clothing products (Kozłowski, Searcy and Bardecki, 2018). They believe that comparing with the traditional trendy fashion, the sustainable fashion respects and encourages diversity of environment and society (Kozłowski, Searcy and Bardecki, 2018).

However, it has been argued that sustainable movement in the fashion industry were slow, isolated and fragmented (Grant et al., 2017; Smelik, 2021). An important issue is that the current fashion design reflects a simple and solidified dichotomous thinking, although guided by the notion of sustainability (Vanska, 2018), and still not able to fully satisfy the needs of all types of consumers from different social groups. Researchers realised that sustainable fashion design should be guided by a diversified mindset, under the perspective of Post-humanism (Vanska, 2018; Blanco-Wells, 2021).

Researchers further noticed the importance of training young designers, who will be the significant part for shifting to a more sustainable future (Bui, Cappellieri and Takacs, 2023). Higher education institutes and universities are believed to lead the social and ecological transformation in the future (Malone and Young, 2023), and the development of relevant knowledge and skills has also been integrated into the pedagogical system gradually. Being aware of its significance, nevertheless, research related to sustainable design education is still in its infancy. Existing research focuses more on developing students' specific skills, such as increasing their knowledge of product recycling and redesign, sustainable marketing, new technologies or material reconstruction (e.g., DeLong, Heinemann and Reiley, 2014; Abner and Baytar, 2019; Murzyn-Kupisz and Hołuj, 2021). However, students might not be able to form a holistic perspective in terms of how to exert their ability and skills to enhance the development of sustainability as a fashion designer in the future. The research team conducted an empirical study on sustainable fashion design education in China. The results reflected a high level of student acceptance of sustainable fashion courses. However, they also noticed that educators' understanding towards sustainability was limited. This reflects a gap between students' willingness to receive sustainable design-related knowledge and the level of educators' knowledge, and further revealed the insufficiency of the sustainable fashion design curriculum in the higher education in China. Thus, this study believes a systematic educational paradigm to help design students develop a comprehensive understanding of sustainable fashion design should be built. It therefore aims to reflect on the paradigm of current sustainable design education of fashion from the perspective of dissolving dichotomous thinking. The next section will look at the problems that dichotomous thinking has brought and the status quo of sustainable fashion design education. It will then explain the process of how to construct a sustainable design project and guide the students to take part in the sustainable design workshops. Finally, an innovative pedagogical model for sustainable design education will be built and discussed.

1.1 Dichotomous thinking and fashion design

Researchers point out that human activities in the last few decades have reflected a negative dichotomous mode of thinking (Vanska, 2018; Bruzzone, 2021). This derived from "Humanism", which originally emphasized humanity as priority of understanding the world in the era of rapid development of human society (Ferrando, 2016; Jeong, Sherman and Tippins, 2021). It revealed a human-centred mindset, as people apparently posited themselves at a privileged position and consider themselves separate from the world rather than being as part of it (Cielemęcka and Daigle, 2019). When talking about Humanism, previous studies discussed more on the relationship between human and non-human species in the natural world (Jeong, Sherman and Tippins, 2021; Ribó, 2023). Accordingly, the concept of "Post-humanism" generated, and human should reconsider their relationship with other species in the natural world (Vanska, 2018; Jeong, Sherman and Tippins, 2021).

Later, more researchers noticed that the core idea of Post-humanism, coexistence, should be broadened to describe not only the human-nature relationship, but also the relationship within human society (Blanco-Wells, 2021; Bruzzone, 2021). In fact, even in the human society, a small group of people derive benefit from their superiority and privilege, which also reflects a dichotomous way of thinking (Quinn, 2013; Bruzzone, 2021; Malone and Young, 2023). Smelik (2021) suggested this dichotomous thinking implied the hierarchical relationship in the social world, as one pole of the binary is superior to the other. Ferrando (2016) also claimed that "not every human being has been invited to the exclusive Party of the Anthropocene". Some populations are deemed as undesirable or less powerful, which suggest that coexistence should also be emphasised in the social world (Ribó, 2023).

The dichotomous thinking also has negative impacts in terms of fashion design, especially for sustainable fashion design. It has always been mentioned that human's fundamental need should be met in terms of fashion product

design (Rissanen, 2017), both emotionally and physically (Armstrong and LeHew, 2014; Grant et al., 2017). However, fashion design under a dichotomous perspective could be authoritarian and simplistic. For instance, conventional fashion design focused more on human bodies, which implied a fixed aesthetic value that garments showed “body beautiful” seemed to be more desirable (Smelik, 2021), or whether current sustainable fashion designs relied too much on technological development (Grant et al., 2017). Fashion design has also been criticised for relying too much on trends or reports but ignored consumers’ real needs and desires (Lee and DeLong, 2016). Generally, fashion products are still designed for “majorities”. It would thus be difficult to provide satisfied sustainable products for some consumers, which were deemed as “minorities”.

1.2 Sustainable design and education

Vanska (2018) explained that “fashion” is not only referring to the commodities, but also defines the boundaries of the human from a narrow to broader perspective. When talking about design of fashion products, researchers notice that rather than simply combining fashion with trendy items, designs should convey one’s identity and self-image (DeLong et al., 2016; Vanska, 2018). This could be difficult to achieve under the current fashion market. Thus, to avoid the pitfalls of dichotomous thinking, it is important to listen to and think more deeply about more consumers’ needs and reflect them in the design as fashion designers (Lee and DeLong, 2016). It needs them to pay attention to different consumers’ lifestyles and behaviours (Kozłowski, Searcy and Bardecki, 2018; Murzyn-Kupisz and Hołuj, 2021).

Scholars believe that human beings can be influential in thinking new possibilities to change the status quo by exerting their agency (Malone and Young, 2023). Design education thus play an important role in shaping and preparing young fashion students to equip the abilities and become responsible and sustainability-oriented (Leerberg, Riisberg and Boutrup, 2010; Murzyn-Kupisz and Hołuj, 2021). More fashion professionals and scholars advocate for integrating sustainable thinking into higher education systematically (DeLong et al., 2016; Irick et al., 2020). Students are trained to develop professional skills to tackle sustainability issues (Ma, 2023), and rethink the fashion system as well (Murzyn-Kupisz and Hołuj, 2021; Bui, Cappellieri and Takacs, 2023).

However, without a full understanding of the sustainable notion, students or even educators could be prone to perpetuating market-orientated design thinking, for example, focusing too much on ever-changing trends (Malone and Young, 2023), or simply relying on eco-friendly materials (Boca and Saraçlı, 2019). To avoid the common dichotomous understanding towards fashion design, existing studies have suggested that design students should carefully consider who they are designing for and also realise their multiple identities during the learning process. They are not only professionals in training, but also users in everyday life (DeLong et al., 2016; Lee and DeLong, 2016). Students could then form a comprehensive thinking and further reflect in the practices (Grant et al., 2017). Empathy for others enable them care for the users and put the affective considerations into design (Malone and Young, 2023; Ribó, 2023).

It has been discussed that practiced-based curriculum such as fashion design should be improved to solve real-world challenges (Abner and Baytar, 2019). It is a process which contains efforts from both educators and learners. While students should be trained with practical skills and gain deeper understanding of sustainability by self-reflecting and planning their work (Irick et al., 2020; Ma, 2023), educators need to serve in advisory capacity and provide guidance throughout the whole process (Lee and DeLong, 2016). Therefore, a curriculum design that requires both parties to work together to accomplish sustainable design practices should be proposed.

2. METHODOLOGY

The research team has started to incorporate a sustainable fashion design education program in the curriculum of Fashion Design Course in Wuhan Textile University in China since 2019. The team established a problem-oriented pedagogical model: the Self-IPER model (Self-Innovation, Self-Practice, Self-Expression, and Self-reflection), to modify and overcome both educators and students’ insufficient understanding towards fashion sustainability, and

further activate students' active and creative thinking and practice.

To be more specific, Self-Innovation encourages students to undertake research by stepping into real-life world. Students should be able to discover new problems in daily life and set proper design target and objectives base on the problems. This stage helps to develop students' innovative thinking abilities; Self-Practice requires students to observe limitations of existing designs and accordingly create a solution by collecting a large amount of data. This step helps to improve students' problem-solving skills and practical apparel-related skills; Self-Expression needs students to actively share their design ideas and final works with others, and also be able to accept queries and feedbacks from peers and instructors, which trains their ability of communication; and Self-Reflection asks students to conduct in-depth reflection on the whole process and evaluate the degree of target achievement, and then summarise what they have learnt for future studies. This step helps to train their ability of deep thinking. The Self-IPER pedagogical model emphasizes students' subjectivity to recognise problems and solve problems. The students are encouraged to go beyond the traditional dichotomous thinking of design. The four steps of Self-IPER model guide them to understand and pursue sustainable fashion design from a holistic perspective.

Following the guidance of Self-IPER model, the research team conducted a project which is a combination with the practical sustainable fashion design module in the Fashion Design course. 265 students from the course took part in the research project. The students chose one of the workshops and carry out a complete design process (Fig. 1), including data collection through questionnaires or interviews, question analysis, consult literature, existing design analysis, propose their own design, present their ideas, receive feedback from peers and instructors, modify their designs, create actual products, showcase their work, and finally reflect and conclude. The students who participated in the project successively completed family matching design for left-behind children, design for Autism children, design for Scoliosis children, transformable design for working women, utility garment design for sanitation workers, design for disabilities, etc. The current study chose three practical sustainable fashion design workshops as examples, which are 1) family matching design for left-behind children, 2) adaptive design for disabilities, 3) transformable design for working woman. The next section details the design process of the three workshops and the students' reflective feedback to illustrate how the Self-IPER model can be applied to better integrate sustainable clothing design into curriculum. It further explores how to improve sustainable design in higher education and develop fashion designers for apparel industry.



Fig. 1 Self-IPER and Design Process

3. RESULTS

Workshop 1 family matching clothing design(Fig. 2)

The objective for this workshop is to design family matching garments for urban left-behind children and their parents. After clarifying the theme, students began with a contextual analysis. They learnt that many children in urban

areas are not adequately cared for from an early age because their parents work or study in other places. The lack of emotional attachment leads to many children experience mild anxiety. Based on the background, the students further looked at existing family matching garments as well as children's clothing in the market. They then analysed trends and design points of the existing brands. With a full understanding of the relevant background, students also conducted an interview in the primary schools.

Combining with the design points of children's clothing, students summarised the key points of their design, which balances the children's physical and psychological needs and considers the occasion, style, colour and material, technical feasibility, and time cost. To reflect the atmosphere of warmth and comfort, students chose soft knitted fabrics. Students also understood that children's scribble show their own inner world the best, which reflect their intuitive perceptions of the world. Thus, they invited children to paint on the garment with textile paints. Small decorations such as hearts and clouds can be attached with Velcro, so that parents and children can adjust each other's decoration and carry out interesting interaction. Students innovatively use of sensor-illuminated interaction devices in their designs and embed biodegradable and drop-resistant fabric inside the product to reduce injuries after falling. After finishing the designs, students invited some young participants and their parents to try the products to receive direct feedback from them. Participants expressed a high level of interest for the detachable decorations. Their parents highly appreciated the design: when parents and children are holding hands, a touch of the button on the cuff activates the lighting device, which is a good way to bring parents and children emotionally attached.



Fig. 2 family matching clothing design

Workshop 2 adaptive design for disabilities(Fig.3)

The aim of this workshop is to design barrier-free clothing that is easy to put on and take off for people with disabilities. Likewise, the students first conduct background studies and marketing analysis. They then realized that there was very limited attention paid to people with disabilities in existing apparel designs. Also, the existing adaptive design for the target users focused more on the functional properties but gave up the excessive and aesthetic value to some extent. Nevertheless, students learnt that there are more than 85 million people with disabilities in China, with physical disabilities accounting for the largest number of people. For them, some daily activities are particularly challenging. For instance, for people who have upper limb impairment, "buttoning" and "zipping" are difficult, and for wheelchair users, it takes longer to put on trousers without help. After learning about their inconveniences, the students began to look further into adaptive design in the current apparel market. They found that Tommy Hilfiger releases its first collection for people with disabilities in 2018, Tommy Adaptive, while designer lili pázmány develops a range of fashionable adaptive garments. These garments are designed with modules attached by as buttons to Velcro and magnetic fasteners, so each part is easier to remove. These existing products give students insight and ideas for further designs. In addition, students had in-depth interviews with people who have disabilities. With fully understanding of their requirements for garments, students finally considered two designs.

They focused their designs on the functionality of the garment, i.e., easy to put on and take off. They also use visually harmonious colours and comfortable fabrics. Moreover, according to the dialogs with the interviewees, students

realise that the design should not only look at the functional properties, but also need to help the users for them expressing unique personalities. Thus, with the combination of their requirements, the final products reflect a change from the “users adapted to the clothes” to a rational and healthy way of dressing where “clothes adapt to the users”. The students realised that except for fulfilling the physiological and physical functional needs, products also need to meet consumers’ social needs and aesthetic that provides convenience and dignity for people with disabilities.



Fig. 3 adaptive design for disabilities

Workshop 3 transformable design for working woman (Fig.4)

This workshop is designed to provide working women with clothing products that can carry their emotional transformation when the occasions changed frequently in their busy lives. Through the background study, students understood that working women were currently facing extremely strong pressure due to the work and inevitable social events. They thus hope to change their emotional expression through different daily outfits. In addition, they hope the product could have different look, and the transforming process could be easy and fast. They are looking forward to finding a single product which meet both needs of working in office and enjoying leisure life.

By clarifying the background and requirements of the working women, students started market research in several shopping malls as well as online shopping platforms. The results showed that the products that meet the requirements were relatively limited, and most of them were leisure dresses, which are not suitable for working place. Students then turned to runway collections to gain more inspiration. Being aware of the design points and target consumers’ requirements, students further conducted interviews with working women.

The respondents showed high expectations towards the transformable garments that suit for multiple occasions. Students then combined the results of interviews and their market research and summarized several key points. The target consumers were office ladies who spend long time in the working place, and thus they need to look smart during work time. The color was chosen as light grey and white, and the materials were decided as degradable cellulosic materials. Students agreed that the materials were in accordance with sustainable design and easy to clean. Considering these working women might need to go to social events, the silhouette was designed to be relaxed fit, with a belt which can adjust the fit if needed. The body is divided above the chest, forming a two-piece structure with a detachable part to change the way they dress during work and after work. The detachable part could be removed to become a dress, forming a relaxed wearing during social events.

After completing the design, the students invited a number of young working women to try on the product and received feedback directly from them. The participants expressed their appreciation for the combination of professional and casual styles in the design, which could satisfy their different dress code demand. They also put forward some effective suggestions, such as paying more attention to the fabrics and decoration of the product.



Fig. 4 transformable design for working woman

3.1 Reflection and feedback

The examples of three workshops reflect the complete sustainable design process guiding by the Self-IPER model. An important part of the process is the students' reflection on themselves and the external feedbacks. The process not only help them to refine their design and final products, but also to see gaps that have not been addressed yet, which help them with other sustainable designs in the future.

At the end of each workshop, in addition to self-reflection and receiving external feedback, students were asked questions about their understanding and acceptance of the sustainable curriculum. Over 93% of students reported that their understanding of sustainable design had deepened and become more comprehensive through the programme.

In addition, the research team conducted in-depth interviews with students. The results of the showed significant changes between before and after taking part in the course. For example, one student said she only focused the aesthetic design of garments before, with less consideration given to the deeper expression of the garment. Through the whole design process in the workshop, she began to think about who she was designing for, which enabled her to think about design methods and goals from a sustainable perspective. Another student said that she had never thought of designing for minorities, but this workshop led her to pay attention to these groups in the society. A student explicitly stated that she learnt how to formulate design goals scientifically and reasonably, and understood that innovation generated from daily life, and that one must pay attention to the social world to design what people real need. A large number of students agreed that they learnt how to set design goals in a scientific and rational way. One student commented on his own reflection process, saying that the project was very stimulating and challenging. He found himself became able to reply to queries and questions during the presentation.

4. DISCUSSION AND CONCLUSION

The three workshops showed how students complete product design process, transforming their ideas into final products. The Self-IPER model enables students to break the traditional dichotomous thinking, focusing not only on designing sustainable garments for the mass market, but also to enhance their ability to design for minority social groups. The workshops require students to highly engage with the project, which requires them to focus not only on the design and production of the products, but also on background and market research, presentation after completion, and ultimately, feedback and self-reflection. This project provides a place for all students to listen, share and practice, and more important, for them to broaden their awareness of sustainable practices (Grant et al., 2017). Students realize problems, reflect and progress through practical design activities (Leerberg, Riisberg and Boutrup, 2010; Lee and DeLong, 2016), which help them to refine their professional skills and ultimately achieve effective

outcomes (Irick et al., 2020).

As future designers, higher education students need to clarify their commitment and responsibility to the society (Murzyn-Kupisz and Hołuj, 2021). From a long-term perspective, this research points the direction to shift towards the sustainable fashion (Smelik, 2021), both for fashion industry and higher education institutes of fashion design (Armstrong and LeHew, 2014). It not only design for general mass market, but also for the people that fall outside from the majority social groups (Vanska, 2018), which reflects the possibility of nurturing responsible design students for fashion industry.

The current design institutes improve their structure of disciplines, while constantly updating their knowledge base (Bui, Cappellieri and Takacs, 2023). Nevertheless, (Armstrong and LeHew, 2014) suggested a significant barrier for developing the structure of curriculum, which is the pressure to integrate different courses that focus on various aspects of sustainable design. This study, although mainly looked at product design, containing the whole process including market research, consumer research, etc., and thus could be considered as an integrated practical project. From the pedagogical perspective, this study improves the higher education curriculum.

There are still some limitations for this study. The Self-IPER model needs an evaluation mechanism to test the effectiveness of the project, for example, the standardization of literature review, the practicability of the design scheme, the rationality of the assessment of the market value of the product, and so on. Thus, building an evaluation will be the next step of the research.

Overall, the study argues that in the post-humanism era, current sustainable fashion design was limited by dichotomous thinking, especially not focusing on the minority groups of people in the current society. This study thus agree that it is important to develop more design students who are able to create sustainable fashion products based on the training in the higher education curriculum. It thus aims to reflect on the paradigm of current sustainable design education of fashion from the perspective of dissolving dichotomous thinking. With the support of Self-IPER model, the study provides a feasible structure to train and deliver responsible fashion designers for the apparel industry.

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