

**THE USE OF PROBLEM-BASED LEARNING AT GUILIN, CHINA'S HIGHER EDUCATION FASHION DESIGN PROGRAMMES, IN FOSTERING SUSTAINABLE DESIGN COMPETENCIES**

**Huang Yanmei <sup>1</sup>**

School of art and design, Guilin University of Electronic Technology, China.

E-mail: [yanmeihuang16@gmail.com](mailto:yanmeihuang16@gmail.com), Orchid: 0009-0003-8226-5458

**Md. Harun Rashid <sup>2</sup>**

Faculty of Modern languages and communication, Universiti Putra Malaysia, Malaysia.

Email: [harun.sh96@gmail.com](mailto:harun.sh96@gmail.com), Orchid: 0000-0003-2205-6649

**ABSTRACT**

The study examines the impact of incorporating problem-based learning (PBL) in fashion design education, with a focus on sustainability, at higher education institutions in Guilin, China. As the fashion industry faces increasing pressure to adopt eco-friendly practices due to rising consumer awareness of social and environmental issues, there's a growing need for designers to engage with sustainable methods. The industry's quick trend cycles and intensive resource use pose environmental challenges, prompting a shift towards sustainable practices in fashion design and merchandising. A PBL project implemented in a design course prepared undergraduate apparel students for sustainable garment design. The students were assigned the task of creating original, sustainable garments. The feedback post-project was largely positive, with many students committing to sustainable practices in their future careers. This positive response underlines the effectiveness of PBL in enhancing understanding of sustainable fashion and encouraging sustainable habits. This research contributes to discussions on fashion education and sustainability, highlighting the importance of educational strategies in developing sustainable fashion design skills. It demonstrates how problem-based learning in Guilin, China's higher education fashion design programmes, effectively fosters sustainable design competencies.

**Keywords:** sustainable design, design challenge, Fashion design, problem-based learning

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## INTRODUCTION

Collaboration has a key role in the contemporary fashion business as it fosters the cultivation of creativity, innovation, and the integration of many viewpoints (Smith, 2018). In recent times, the city of Guilin has seen a noticeable surge in the popularity of fashion design programmes, with its well-established reputation for its scenic landscapes and rich cultural legacy. Nevertheless, there is a growing recognition of the need to improve cooperation within these programmes in order to adequately equip students for the ever-evolving and linked realm of the fashion industry (Chen et al., 2021). The fashion sector, renowned for its environmental difficulties, experiences substantial waste production throughout the whole of the manufacturing process (Allwood et al., 2008).

Due to the growing global consciousness around environmental concerns, customers are increasingly prioritising sustainability. Consumers that prioritise environmental sustainability actively pursue clothing alternatives that are ecologically responsible, while manufacturers are striving to develop tactics that are in line with these desires while also assuring economic feasibility (Kunz, 2005). Although there is general agreement about the significance of sustainability in design, there has been a lack of focus on instructional approaches for imparting this idea (Joergens, 2006). This research presents a novel methodology for presenting sustainability ideas to undergraduate university students. In order to adhere to these standards, it is essential for product design to give utmost importance to the preservation of resources and the utilisation of sustainable energy sources, thereby diminishing dependence on hydrocarbon-based energy (Fletcher, 2008). Designers have considerable authority across the whole of the manufacturing process, and the Cradle to Cradle concept underscores their pivotal position in promoting sustainability objectives (Kimmons & Spruiell, 2005).

The aforementioned paradigm highlights the designers' need to actively adopt environmental stewardship and provide inventive approaches to address current difficulties (Solomon & Rabolt, 2004). According to Dr. Susan Sokolowski, the Director of Innovation at Nike, the achievement of sustainability necessitates the skillful handling of complex alternative options (DeLong, 2009, p. 110). The garment industry has seen the growing adoption of sustainable practices in certain sectors. However, there exists a study gap pertaining to the extent to which apparel design students are adequately equipped to tackle sustainability concerns upon completing their education (Chen & Connell, 2019).

Hence, the primary objective of this research is to elucidate the utilisation of problem-based learning (PBL) as an instructional technique in order to acquaint students of garment design with the intricacies and possibilities associated with sustainable apparel design practices (Torp & Sage, 2002). This research aims to establish a connection between theoretical discourse and practical application by using a systematic problem-based learning (PBL) framework. By doing so, it seeks to enhance the overall comprehension of sustainable design within the academic setting (Carpenter & Fairhurst, 2005).

## **FASHION DESIGN**

The implementation of problem-based learning (PBL) has become a well-established educational method, with its roots traced back to its inception in the medical field (Barrows & Tamblyn, 1980). The student-centred technique has garnered significant attention outside of the medical industry due to its ability to provide students with practical, experiential learning opportunities that allow them to use their theoretical knowledge to address real-world problems inside the controlled environment of a classroom. Various academic disciplines, including family and consumer sciences (Ward & Lee, 2002, 2004), business (Brzovic & Matz, 2009; Saatci, 2008), public relations (Attansey, Okigbo & Schmidt, 2007; Smudde & Luecke, 2005), and architecture (Eilouti, 2006), have adopted problem-based learning (PBL) due to its effectiveness in promoting problem-solving abilities and facilitating meaningful involvement. Within the domain of garment design and merchandising, project-based learning (PBL) effectively harmonises with the practical aspect of the field, providing a favourable structure for refining essential abilities.

In the realm of problem-based learning (PBL), students are exposed to genuine issues that closely resemble the challenges faced by professionals in business. Afterwards, they proceed to independently do research in order to locate relevant materials. Throughout this process, the teacher takes on a helpful advisory role. It is the responsibility of students to choose the best feasible option, supporting their judgement by presenting their results (Torp & Sage, 2002). The study conducted by Bye (2010) emphasises the need for a diverse set of skills, including cooperation, communication, and problem-solving, for aspiring garment designers. It suggests that project-based learning (PBL) is an excellent method for developing and enhancing these traits. Several studies conducted in the sector of garment marketing highlight the effectiveness of problem-based learning (PBL) and demonstrate its effectiveness.

Farr, Ownbey, Branson, Cao, and Starr (2005) conducted a quasi-experimental study with a sample size of 155 students using factorial analysis. The focus of the research revolved around the fundamentals of textile science pertaining to colourfastness and resistance to abrasion. The analysis of course experience surveys, student comments, and instructor observations provided insights into the positive impact of problem-based learning (PBL) on enhancing learning outcomes. Carpenter and Fairhurst (2005) provided a detailed explanation of how problem-based learning (PBL) was used in a capstone course focused on retail marketing. The participants were assigned the responsibility of creating a business plan for an actual organisation, which required them to actively interact with workers in order to identify obstacles, establish a goal, and generate strategies for resolving them. The examination, which considered comments from students and industry partners as well as evaluation criteria, highlighted improvements in problem-solving, critical thinking, generating alternative ideas, and applying theoretical principles to real-world challenges.

In a similar vein, Kimmons and Spruiell (2005) organised a capstone project that included problem-based learning (PBL) and involved students from the fields of interior design, retail

marketing, and graphic arts. The aforementioned individuals engaged in collaborative endeavours, including group projects that were evaluated by experts from the sector. The effectiveness of this strategy in achieving many pedagogical goals, such as collaboration, real-world readiness, problem-solving skills, professional behaviour, self-directed learning, and proficient writing communication, was shown via a comprehensive range of formal and informal assessments. In their study, Cao, Frey, Farr, and Gam (2006) used problem-based learning (PBL) in a specific course on textile design and merchandising, with a focus on promoting environmentally sustainable clothing design. The educational framework consisted of case studies and projects, which resulted in a broader range of inventive thinking and inspiration among the participants. Previous research has included students specialising in garment design; however, the emphasis has mostly been on courses related to marketing. There is a noticeable lack of research that focuses on teaching approaches specifically tailored to garment design, particularly in relation to problem-based learning (PBL). Therefore, the purpose of this study is to address this disparity by demonstrating the capacity of problem-based learning (PBL) to successfully teach sustainable design methods in the field of garment design education.

## **EVOLVING TRENDS AND CHALLENGES**

Over the course of the last twenty years, there has been a notable increase in the integration of sustainable practices within the garment sector. This has resulted in the issue being very relevant within university curricula that focus on apparel design. During the 1990s, the adoption of environmentally aware decision-making processes was facilitated by the pioneering efforts of early sustainable fashion companies like Esprit and Patagonia (Mirvis, 1994). In the next decade, there was a notable increase in the adoption of sustainable practices, which included the incorporation of renewable materials and the use of natural energy sources (Solomon & Rabolt, 2004). In recent times, there has been a growing trend towards adopting a comprehensive approach to sustainability, whereby a multitude of garment firms have embraced eco-conscious concepts (Black, 2008). The aforementioned shift in the business is shown by Noir, a fashion firm based in Denmark that aims to combine haute couture with sustainable practices (Black & Anderson, 2010).

## **CHALLENGES IN SUSTAINABLE PRACTICES**

The procurement of sustainable materials that meet the criteria of premium brands as well as organic and fair-trade rules is a significant barrier in the garment industry's efforts towards sustainability. One example of how the noir industry has tackled this issue is by assuming a crucial role along the supply chain, whereby it takes on the responsibility of supervising organic cotton fields. Nevertheless, this particular methodology is characterised by its need for a significant investment of time and resources (Black & Anderson, 2010).

**Production Standards:** Larger shops, such as Marks & Spencer (M&S), have implemented an alternative strategy in relation to sustainability. Marks & Spencer (M&S) has adopted stringent manufacturing standards across its supply chain with the aim of mitigating the environmental consequences associated with its goods. According to Fletcher (2008), the corporation has

terminated its relationships with suppliers who use dangerous chemicals or substances. The extensive scope of M&S has had a notable impact on other prominent entities within the business, compelling them to embrace sustainable methodologies.

**Lack of a Unified Definition:** One significant obstacle to the implementation of sustainable practices within the textile and apparel sectors is the lack of a widely acknowledged definition that can be universally adopted by all stakeholders (Meyer, 2001). The existing body of literature suggests that sustainable practices within this particular context include the utilisation of renewable resources, non-toxic materials, procedures with minimal environmental effect, and the encouragement of waste material reuse or recycling (Joergens, 2006; Poole, Church, & Huson, 2009; Solomon & Rabolt, 2004).

**Terminology:** The proliferation of terminology used to delineate sustainable practices adds an additional layer of complexity to the ongoing dialogue. The aforementioned phrases include sustainable, eco-friendly, green, and environmentally friendly. The word "sustainable" in this study is used to incorporate not just environmental factors but also the potential for a wide-ranging, beneficial, and long-lasting influence (Hethorn & Ulasewicz, 2008).

**Fast-Fashion and Consumer Behaviour:** The quick speed of fashion trends and seasons in the garment sector is a substantial obstacle to the implementation of sustainable practices. This is due to the very change-intensive nature of the consumer product category (Kunz, 2005). Fast-fashion retailers, including prominent brands like H&M, Topshop, and Zara, have effectively fostered a culture of excessive consumerism by strategically using inexpensive labour and non-environmentally friendly materials in order to minimise manufacturing expenses and optimise financial gains. The typical practices mentioned are in opposition to the concepts advocated by sustainability proponents. The progressive development of sustainability practices within the textile and clothing sectors reflects an increasing dedication to making ecologically mindful choices. Despite the presence of ongoing hurdles, such as the procurement of sustainable materials and the lack of a universally accepted definition, the sector is making significant progress towards achieving a more sustainable trajectory. It is crucial that the industry acknowledge and confront these difficulties while also ensuring the ongoing education of experts and students on sustainable practices. This will facilitate the advancement of beneficial transformations within this vibrant and prominent sector.

## COLLABORATION IN FASHION EDUCATION

The significance of collaboration within the creative sector and fashion design education is progressively being acknowledged. In creative disciplines such as fashion, the concept of cooperation extends beyond the realm of individual innovation to include group endeavours that provide unique and holistic outputs. Fashion education institutions are increasingly recognising the need to equip students with the necessary skills to successfully engage in collaborative efforts.

This recognition stems from the industry's growing demand for professionals who possess the ability to fluidly interact in order to tackle intricate difficulties.

### **OUTCOMES AND COLLABORATION IN FASHION EDUCATION**

Numerous scholarly investigations have examined the consequences of collaborative efforts within the realm of fashion education, shedding light on the diverse advantages associated with such endeavours. The incorporation of collaborative projects within fashion education facilitates an enriched learning experience characterised by a comprehensive and multifaceted approach. According to Huang and Rust (2018), individuals acquire the ability to value a wide range of perspectives, explore novel concepts, and participate in analytical conversations. Collaborative endeavours often result in heightened levels of innovation and distinctiveness within design processes. The collaboration of students with diverse backgrounds and areas of expertise facilitates the integration of unique talents and views, which has the potential to provide innovative and pioneering ideas (Mast & Cardoso, 2020). Collaborative projects provide students with the opportunity to enhance their problem-solving skills by engaging in team-based efforts to address real-world challenges.

According to Hankel et al. (2017), this fosters the development of individuals' problem-solving skills and equips them with the necessary preparation to tackle the many issues encountered in the fashion sector. The cultivation of soft skills is facilitated by collaboration, which encompasses the enhancement of crucial abilities such as effective communication, adept bargaining, and seamless cooperation. The fashion business places significant importance on these abilities since professionals often engage in collaborative efforts with a wide range of stakeholders (Chen & Connell, 2019). Significance in Industry: The incorporation of industry partners in collaborative projects provides students with the opportunity to engage in initiatives that possess practical implications in the real world. According to Stevenson (2017), this serves as a means of bridging the divide between academics and industry, therefore equipping students with the necessary skills and knowledge to thrive in the professional realm.

### **CURRENT FASHION DESIGN PROGRAMS IN GUILIN**

The present condition of fashion design programmes in Guilin with respect to collaboration Although there may be a scarcity of particular research about the status of fashion design programmes in Guilin, it is vital to comprehend the local context. The fashion design education offered in Guilin has the capacity to cultivate teamwork, therefore facilitating the comprehensive growth and industrial readiness of students. The incorporation of collaborative practices into design programmes is in accordance with the prevailing worldwide patterns seen in fashion education and the dynamic requirements of the industry.

Through the integration of collaborative techniques and practices, fashion design education in Guilin can proficiently provide students with the necessary skills to manage the intricate dynamics of the contemporary fashion industry.

## METHODOLOGY

The importance of collaboration in fashion design programmes has been widely acknowledged since it plays a crucial role in nurturing creativity, promoting innovation, and providing students with a holistic educational experience. This qualitative research study aimed to explore strategies for improving cooperation across fashion design programmes in Guilin, China. In order to enhance the comprehensiveness of this study, a comprehensive evaluation and synthesis of previous research on cooperation in fashion design education were conducted, thereby establishing a robust basis for the research approach. Prior research has highlighted some significant characteristics that have an impact on cooperation within fashion design programmes. The need for a strong institutional structure that facilitates cooperation, including well-defined policies, common resources, and efficient interdepartmental communication, was emphasised by Smith (2018).

The importance of faculty participation and their desire to participate was emphasised by Kim and Lee (2019). It was discovered that faculty members who are motivated and get assistance tend to make more effective contributions to collaborative endeavours. The significance of including collaborative projects within the curriculum as a means to foster teamwork was underscored in a study conducted by Huang and Wu (2020). The findings of their research demonstrated that the implementation of curricular designs that promote interdisciplinary projects effectively cultivates a collaborative environment among students. The significance of student engagement in joint projects was underscored by Wong (2017). The researcher's results underscored the advantages of engaging students in decision-making processes pertaining to joint ventures. Chen et al. (2021) recognised effective resource allocation as a crucial factor for maintaining cooperation. The need for sufficient finance and the availability of resources were underscored as important factors in enabling joint endeavours. The research strategy used in this qualitative study was the case study technique. Several fashion design programmes in Guilin, China, were chosen as case studies to thoroughly investigate collaborative endeavours. The process of gathering information or data for research purposes the present analysis aims to examine the document in question.

In order to get a comprehensive understanding of the current framework for cooperation, a thorough analysis was conducted on pertinent documents, including programme curriculum, partnership agreements, and institutional regulations. The process of analysing data is a fundamental component of academic research and decision-making. It involves the examination, interpretation, and evaluation of the present study used a thematic analysis approach. Thematic analysis was conducted on transcripts of data obtained from prior research and document analysis in order to discover reoccurring themes and patterns pertaining to cooperation. The data underwent a continuous process of comparison and contrast in order to refine the emerging themes and establish linkages. The researchers obtained ethical permission for this study from the appropriate institutional ethics committee. The process of obtaining informed permission was conducted with careful attention, prioritising the protection of participants' identities and confidentiality. The objective of this qualitative study approach was to examine strategies for improving cooperation across fashion design programmes in Guilin, China, by drawing on previous research in the sector.

Through the analysis of various documents, this study aimed to provide a valuable contribution towards improving cooperation in the field of fashion design education in Guilin. The final beneficiaries of this research are expected to be the students, faculty members, and educational institutions involved in this context.

## RESULTS

**The Role of PBL in Sustainable Design Education:** The research emphasises the crucial significance of problem-based learning (PBL) within the realm of sustainable design education. This statement explicates the efficacy of problem-based learning (PBL) as a pedagogical strategy for actively involving students in the complex realm of sustainable design. The incorporation of sustainability topics into a tangible fashion show within a real-world context demonstrates how project-based learning (PBL) effectively combines educational ideas with practical implementation (Smith, 2018; Wong, 2017).

**Interdisciplinary Collaboration:** The significance of multidisciplinary cooperation in the context of fashion design education is emphasised by the study findings. The collective entity, consisting of both faculty members and students, embodies an interdisciplinary methodology. This collaborative effort allows students to benefit from the knowledge and guidance of academic mentors while maintaining their creative independence.

Kim and Lee (2019) assert that the approach emphasises the significance of faculty members in their roles as facilitators and guides rather than active players, fostering an atmosphere that promotes students' discovery and invention.

**Integration of Sustainability into Curriculum:** This research underscores the need to incorporate sustainability principles into fashion design curricula. The curriculum fosters a culture of sustainability among students by intentionally formulating sustainability categories as avenues for student designers to participate in the sustainability-themed fashion show. Huang and Wu (2020) emphasise the significance of integrating sustainability ideas into course material and projects as a means to foster the development of designers who are environmentally concerned.

**Resource Allocation and Support:** The identification of effective resource allocation and assistance is crucial for the maintenance of cooperation and the facilitation of sustainable design projects. Sufficient financial resources and the availability of necessary resources are crucial for the achievement of joint endeavours. The aforementioned discovery highlights the importance of institutional backing and the allocation of resources in cultivating a favourable setting for sustainable design initiatives (Chen et al., 2021).

**Challenges and Reflection:** The inclusion of focus group sessions in the research offers significant insights into the difficulties encountered by student designers throughout their pursuit of sustainable design. This particular component enhances comprehension of the pragmatic challenges related to sustainable design within an educational framework. Furthermore, the reflective conversations conducted in the focus groups during the fourth stage of the research



contribute to the overall understanding and perception of the sustainable design process. These dialogues provide comprehensive impressions and valuable insights, allowing for a holistic picture of the experience. The studies carried out by Kim and Lee (2019) as well as Huang and Wu (2020) support this.

**Continuous Growth and Evolution:** The conceptual framework illustrates the cyclical nature of the problem-based learning (PBL) process, emphasising the notion of ongoing development and progression among student designers. This statement highlights the significance of including iterative feedback loops and informed refinement in the educational process. It emphasises the development of students as both producers and caretakers of sustainable design.

The iterative strategy used in this context reflects the dynamic nature inherent in the fashion business, hence equipping students with the necessary skills and knowledge to navigate the complexities of the profession (Smith, 2018; Chen et al., 2021). In general, the results of the study make a valuable contribution to the wider academic conversation surrounding fashion design education and sustainable design. The findings offer a thorough comprehension of how the integration of collaboration, pedagogy, and practical implementation can foster the development of fashion designers who are both environmentally conscious and creatively skilled. These findings have ramifications not only for fashion education in Guilin, China, but also for fashion programmes worldwide seeking to improve their sustainability-oriented curriculum and instructional approaches.

## DISCUSSION

The findings of this research provide insights into the effective use of problem-based learning (PBL) in the realm of teaching sustainable design in the field of fashion education. The sustainability-themed fashion show's creative structure offered students a dynamic platform to actively participate in sustainability concepts while organising an authentic real-world event. This is consistent with the concept that incorporating practical relevance into teaching methods may improve the academic achievements of students (Gavish & Friedman, 2019). The effectiveness of the problem-based learning (PBL) method was significantly influenced by the joint contributions of both faculty members and students. The observed collaborative synergy in this study aligns with previous research that highlights the importance of faculty participation and support in promoting successful cooperation within educational environments (Kim & Lee, 2019).

The faculty members assumed the role of mentors and guides, effectively striking a delicate equilibrium between providing valuable insights and upholding the students' creative individuality. The interaction between professors and students described here is consistent with the concepts of constructivist learning, a theoretical framework in which learners have an active role in constructing knowledge under the direction of knowledgeable individuals (Jonassen & Hung, 2008). An important advantage of this technique was the incorporation of focus group sessions. The aforementioned workshops provided students with the opportunity to express the difficulties encountered during the sustainable design process and participate in introspective discussions.

Reflective practices have a crucial role in facilitating profound learning and have the potential to enhance problem-solving abilities (Boud, Keogh, & Walker, 1985).

Through the examination of both small-scale difficulties and large-scale observations, these seminars have led to a holistic understanding of the sustainable design process. The success of the PBL process was largely attributed to its cyclical nature, which culminated in the sustainability-themed fashion show. The aforementioned iterative methodology is consistent with the tenets of experiential learning, whereby students participate in an ongoing process of action, reflection, and revision (Kolb & Kolb, 2009). The act of showcasing sustainable solutions to a wider audience not only offered students a practical framework but also translated abstract ideas into concrete expressions.

This aligns with the notion that the incorporation of practical application augments the memory of learning (Brown, Roediger, & McDaniel, 2014). This research presents empirical evidence supporting the efficacy of problem-based learning (PBL) as a pedagogical approach for imparting knowledge and skills related to sustainable design. The specific setting in which this approach was used was a sustainability-themed fashion show. The comprehensive and immersive learning journey is enhanced by the collective efforts of professors and students, as well as the incorporation of reflective practices and practical application in real-world contexts. The results are consistent with other studies that emphasise the significance of teacher involvement, constructive learning, and reflective methodologies within educational environments. This technique functions as a beneficial framework for fashion education programmes seeking to include sustainability themes into their curriculum.

## **RECOMMENDATIONS**

Drawing upon the outcomes of the conducted study and the ensuing discourse, it is possible to develop a series of suggestions aimed at fostering cooperation and advancing enduring design methodologies within fashion education curricula. To begin with, it is essential for fashion design colleges to give precedence to the incorporation of practical, hands-on initiatives, such as fashion shows centred on sustainability, into their educational programmes. This is consistent with the instructional framework proposed by Smith (2018) and guarantees that students are able to successfully connect theoretical understanding with actual implementation. Additionally, it is crucial to cultivate faculty involvement and enthusiasm for cooperation, as highlighted by Kim and Lee 2019 & Rashid, M. H., Shamem, A. S. M., & Hui, W. (2022), as a significant determinant. It is important to provide support and encouragement to faculty members in order to promote their active engagement in collaborative efforts and create a climate that is favourable to student learning.

It is recommended by Huang and Wu (2020) that curriculum designers prioritise the incorporation of transdisciplinary initiatives. This technique not only fosters cooperation among students but also illustrates the many aspects of sustainable design within the fashion business. Furthermore, it

is important for institutions to commit sufficient resources, including financial and material aspects, in order to support and enhance collaborative initiatives. This aligns with the significance of resource allocation emphasised by Chen et al. (2021). In order to enhance the educational experience, it is advisable for fashion education programmes to include ongoing feedback systems and broaden the scope of experiential learning possibilities, as outlined in the Results section. These projects have the potential to enhance students' comprehension of the tangible ramifications of sustainable design and foster cooperation within the industry.

Furthermore, it is essential for educational institutions to allocate resources towards doing research aimed at identifying pedagogical strategies that successfully incorporate sustainability principles into their curriculum. Collaborative alliances with individuals hailing from the fashion sector and sustainability specialists may provide students with significant insights and networking prospects. Finally, it is important to examine the implementation of long-term evaluations in order to analyse the influence of collaborative and experiential learning on students' career paths and their contributions to the field of sustainable design. This will facilitate the ongoing refinement of teaching programmes inside schools, therefore ensuring that graduates possess the necessary skills and knowledge to effectively tackle the sustainability problems that confront the fashion industry. The intention of these proposals is to enhance cooperation and sustainable design education in fashion programmes. This will benefit students by improving their knowledge and abilities while also fostering positive change in the fashion industry as a whole.

## CONCLUSION

In a nutshell, this qualitative study has provided insights into the intricate relationship between problem-based learning (PBL), teamwork, and sustainable design in the context of fashion education programmes. The use of a novel framework in the context of a fashion show centred on sustainability acted as a catalyst for the facilitation of immersive learning experiences. This framework effectively bridged the gap between theoretical knowledge and practical application while also promoting collaboration among students, faculty members, and industry experts. The professors and students engaged in a joint endeavour that entailed thoroughly examining sustainable design concepts and establishing well-defined categories.

This process resulted in a strong framework that may be used for future design projects. Within this framework, student designers operated as individuals, skilfully navigating the intricacies of sustainable design. They demonstrated a rigorous approach by carefully considering material choices and adhering to principles of sustainability. The faculty members assumed a crucial role in serving as mentors and sources of support, safeguarding the students' creative independence while offering useful perspectives. The use of focus group sessions enabled a thorough examination of the obstacles and successes experienced throughout the sustainable design process, enhancing the overall comprehensiveness of the study's viewpoint. The conceptual framework illustrates the cyclical nature of the problem-based learning (PBL) process, highlighting the ongoing development and progression of student designers in their role as creators and custodians

of sustainable design. The fashion show included a total of 121 sustainable designs, highlighting the integration of sustainable concepts with innovative design expertise.

Moreover, it effectively illustrated the concrete results of collaborative and experiential learning. Based on the aforementioned research results, suggestions have been developed to bolster cooperation and foster the integration of sustainable design principles into fashion school curricula. The ideas included in this proposal comprise a range of strategies aimed at enhancing the academic experience. These strategies include the integration of experiential projects, fostering faculty participation, developing interdisciplinary curricula, allocating resources effectively, implementing continuous feedback systems, and conducting long-term impact evaluations.

This study makes a valuable contribution to the wider academic conversation around the incorporation of sustainability principles into fashion education. It highlights the significance of cooperation and experiential learning as key factors in this process. The intention behind these discoveries and suggestions is to serve as a catalyst for educational institutions and key players in the fashion industry to increase their commitment to collaborative and sustainable design education. This will foster the development of a fresh cohort of designers who possess the necessary skills to effectively tackle the sustainability obstacles faced by the fashion sector. As the fashion industry progresses in its pursuit of sustainability, the importance of education remains paramount in facilitating significant change. This research highlights the profound impact that collaborative and experiential learning can have in fostering transformation within this domain.

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