

# CREATIVE APPROACHES TO TEACHING SUSTAINABLE DESIGN

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## ABSTRACT

Sustainable design has become a crucial standard of modern design, with its teaching requiring the integration of theory, practice, and innovative pedagogical approaches. This article presents creative teaching methodologies at the Department of Design, Faculty of Textile Engineering, Technical University of Liberec, focusing on Design Thinking combined with Zero-Waste Fashion methods and the integration of artificial intelligence. The instruction blends traditional principles inspired by Bauhaus pedagogy with modern technologies and interdisciplinary projects, thus preparing students for the challenges associated with environmental responsibility. Through specific student projects, the article demonstrates how these innovative approaches can be applied in practice and how they foster the development of empathy, creativity, and critical thinking. Research findings confirm that integrating sustainable methods into education enables students to create aesthetically appealing and functional designs with minimal environmental impact. This approach proves to be pivotal in shaping a new generation of responsible designers.

## KEYWORDS

Sustainable Design; Zero-Waste Fashion Design; Design Thinking; Artificial Intelligence; Empathy in Design, Art Pedagogy.

## INTRODUCTION

Sustainable design is becoming a key standard for designers across industries, with its importance growing alongside global environmental challenges. Teaching these principles requires a combination of theoretical knowledge, practical experience, and innovative approaches that foster creativity, critical thinking, and the ability of students to address complex problems.

This article focuses on the teaching methodologies of sustainable design at the Department of Design, Faculty of Textile Engineering, Technical University of Liberec (TUL FT KDE). It examines approaches based on the Design Thinking framework, combined with Zero-Waste Fashion methods, the integration of artificial intelligence, and creative techniques inspired by Bauhaus reform pedagogy. This combination enables students to connect environmental responsibility with the aesthetic and functional aspects of design.

The aim of this article is to highlight the core pedagogical methods and demonstrate their practical application through specific student projects. These methods not only support the aesthetic and functional aspects of design but also foster a sense of

responsibility and empathy among future designers. Emphasis is placed on interdisciplinarity and the ability to address global environmental challenges.

The integration of sustainability into the creative process of design education has significantly evolved, especially as global awareness of environmental issues has increased. A key moment was the United Nations General Assembly (UNGA) Resolution 57/254, which initiated the UN Decade of Education for Sustainable Development (DESD) for 2005-2014. The resolution highlighted the need for education reform to promote sustainable practices across various fields, including design. This initiative marked a methodological shift from traditional problem-solving approaches to a system-oriented perspective. The proclamation encouraged not only designers but also educational institutions in creative pedagogy for design to consider the broader implications of their work within social and environmental contexts.

As global awareness of environmental challenges has intensified, educational institutions increasingly recognize the importance of equipping students with the skills and knowledge necessary to address complex sustainability issues through creative learning methods. This shift reflects a broader commitment to fostering ethical awareness, critical

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thinking, and collaborative problem-solving among future designers, thereby enhancing their ability to contribute to a sustainable future.

“Design is a way of thinking. Everything around us has an artificial origin, and someone had to design it.” [2] The term Design Thinking dates back to the 1960s and was first described by Herbert A. Simon in his book *\*The Sciences of the Artificial\** [2], paving the way for the development of the Design Thinking concept as we know it today. The complexity of teaching sustainable design offers the opportunity to incorporate interactive and nonlinear project solutions through Design Thinking into innovative pedagogical processes. This method, as defined today, was developed by Stanford’s design school in collaboration with the innovation studio IDEO and consists of five phases: Empathize, Define, Ideate, Prototype, and Test. It is an innovative problem-solving approach focusing on understanding the user, empathy, and a creative process for designing new solutions. It is used for tackling complex or poorly defined problems and emphasizes customer needs and experience. For educational purposes, it is used to enhance learning and support students’ creative thinking, teamwork, and responsibility for their learning. [2], [3], [4], [5].

A research question [6], [7], [8] explored whether Bauhaus reform movement’s artistic pedagogical approaches could be linked with modern Design Thinking educational methods. Would this connection prepare students for new challenges arising from the need for responsible and sustainable design? The answer is yes. Linking Bauhaus’s pedagogical approach with the interactive and nonlinear thinking of Design Thinking proves effective for practical instruction at universities. It has established a new principle for innovative creative teaching methods at TUL FT KDE, showing itself to be key to transforming creative pedagogy and design education under contemporary conditions for sustainable design.

Like Bauhaus emphasized integrating theoretical knowledge with practical skills (craftsmanship), modern sustainable design education demands a combination of theoretical understanding in environmental and ethical principles with innovative teaching methods, enabling students to apply these insights to practical scenarios. The Bauhaus teaching principle focused on combining theoretical and practical skills, which was an innovative approach at the time. The curriculum was based on specific tasks preparing students for real-world artistic, design, and architectural work. This strong link between teaching and real projects reflected the needs of the era, allowing students to develop their theoretical knowledge while refining their practical skills.

This principle naturally connected art and industrial production, significantly influencing the evolution of modern design. Just as Bauhaus promoted an interdisciplinary approach to education in its time,

contemporary design education at universities emphasizes practical projects that address global environmental challenges while connecting creativity with responsibility. As Bauhaus responded to the need for an art-industry nexus of its time, today’s educational trends in design face the necessity of incorporating sustainable practices and technologies. This new pedagogy combines creativity, innovation, ethical, and ecological principles, reflecting not only the legacy of Bauhaus pedagogy but also the methodologies of contemporary design.

## **CREATIVE AND INNOVATIVE PEDAGOGICAL APPROACHES**

Design Thinking provides a methodology for addressing complex challenges, including those related to sustainability. This iterative process, focusing on empathy, idea generation, and prototyping, aligns with the teaching objectives of the Department of Design and allows students to translate abstract sustainability principles into practical solutions. Through its three main phases - empathy, idea generation, and prototyping - Design Thinking bridges theoretical knowledge with practical skills and enables a creative approach to solving complex challenges.

In the first phase, emphasis is placed on understanding users’ needs and their environment. Students employ methods such as interviews and observational studies to identify key problems and areas for improvement. During the idea-generation phase, they use brainstorming techniques and visualization tools (sketching through drawing, painting—both traditional hand-crafted and digital art techniques) to create original designs. This process allows students to iteratively test and refine their ideas, facilitating the practical implementation of sustainability principles. The Design Thinking approach serves as a fundamental pedagogical framework utilized in all the examples presented (see the following subchapters). These examples illustrate the practical outcomes derived from applying Design Thinking in combination with other approaches and concepts, such as Zero-Waste Fashion, the integration of artificial intelligence, and interdisciplinary collaboration.

### **Empathy in design**

Empathy is key to understanding users’ needs and creating new products that resonate on a deeper level. Agáta Nosálová applied the Design Thinking method in her bachelor’s thesis, where she designed a unisex clothing collection inspired by stop-motion animation. This approach not only enhanced the creativity of the design but also addressed specific challenges such as garment variability and sustainability, which were the core principles of the project. The creative process employed the draping technique on mannequins to create designs with a minimal number of pattern pieces, emphasizing

functionality and emotional connection with the user. The following description outlines how the various phases of Design Thinking were implemented in the practical development of the collection. [9]

- a) The first phase of Design Thinking, empathy, was utilized to understand users' needs and their requirements for clothing. The author focused on analyzing a selected range of user needs and exploring ways to adapt garments for different body shapes and the possibility of multiple ways to wear them. The goal was to design clothing that was functional yet easily adaptable for both men and women. Inspiration for the variability of garments was drawn from the concept of stop-motion animation, where shapes and forms change with each new frame. This approach provided a clear understanding of the necessary considerations for universal design and the adaptability of garment silhouettes.
- b) **Ideation.** In this phase, the author generated ideas and clothing designs based on the concept of universal, variable garments that can be adjusted, see Fig. 1. The process involved exploring various textile materials and draping techniques, which helped create garments with the desired versatility in form. The variability of garment silhouettes was adapted to the human body through diverse styling approaches. Examples included openings for the head and arms that could be combined in various ways. For this creative process, the author drew inspiration from shaping clay, experimenting with different colors and shapes. The garments were complemented with a series of large-scale patterns printed on textiles using direct digital printing. This process merged artistic creativity with modern textile technology, which was essential for achieving the desired artistic intent, variability, and sustainability. [10]
- c) **Prototyping.** The prototyping phase was a critical step in bringing the ideas to life in the form of tangible garments. The author chose to experiment with textile materials, including recycled materials, which contributed to the sustainability of the entire design. She created specific garment models that could be adjusted in terms of size, shape, color, and functionality to meet individual needs. By using various combinations of unused textile materials (e.g., from old sweatshirts and sweaters), prototypes were developed, then tested and refined based on feedback and sustainability requirements. Modeling on wooden mannequins also helped mimic the stop-motion technique, where each step and movement forms a new whole, see Fig. 2.
- d) **Testing.** Testing the garments during the various stages of product design was an integral part of the collection development process. Based on the created prototypes, the garments were tested in real-world use on a 1:1 scale. The testing evaluated not only practicality but also sustainability and functionality of the garments. The garments were assessed for comfort, versatility, and functionality, which helped determine whether the designs met the actual needs of users. The insights gained were implemented by the author into the final design of all three garments, see Fig. 3.

The entire interactive Design Thinking process enabled the student to flexibly respond to challenges that arose during the creation of the collection and to continuously improve the designs based on feedback and the verification of actual user needs. This approach combined the creative and practical aspects of design with the requirements for sustainability, innovation, and flexibility - essential factors for modern unisex clothing design.



Figure 1. Clothing silhouette variability – design drawing.



Figure 2. The process of draping on a mannequin – finding the silhouette of a garment.



Figure 3. Clothing collection – result.

### Zero-waste fashion

Within the art education at the Department of Design, students are provided opportunities to creatively utilize upcycling and recycling techniques. Zero-Waste Fashion is an approach that promotes circular economy principles and the efficient use of materials, aiming to eliminate any waste. In pedagogical practice, this approach involves teaching students to plan their designs in a way that minimizes waste during the creation of garments and clothing patterns. The principles of sustainable fashion design and a shift in the approach to fashion design education were articulated by Timo Rissanen in the text *\*Possibility in Fashion Design Education – A Manifesto\** [11]. The core theses of Zero-Waste Fashion principles defined by him are implemented in creative teaching at TUL FT KDE. During the creative process of fashion design education at the Department of Design, students first work with mock-up (auxiliary) materials and then apply their designs in practice, which helps them enhance their problem-solving skills and view design not only from an aesthetic but also from a functional and sustainable perspective.

An example of the application of the Design Thinking approach in this area is Anna Střídová's master's studio project focused on transforming old denim into a modern unisex clothing collection. This project demonstrates how environmental principles can be combined with an attractive and innovative aesthetic result. Emphasizing Zero-Waste Fashion, the project focuses on creating garments with minimal to zero material waste during production, effectively linking sustainability with the aesthetic and functional aspects of modern fashion. The project not only exemplifies creativity in design but also offers a practical demonstration of addressing waste issues in the fashion industry.

Anna Střídová aimed to create an eco-friendly garment design process utilizing upcycling and textile collage techniques. The used old denim (jeans and denim jackets) was effectively deconstructed into flat parts, which were subsequently composed using an artistic authorial collage technique to create new flat material for crafting unique garment models, see Fig. 4 and 5. This method supports the sustainability of the



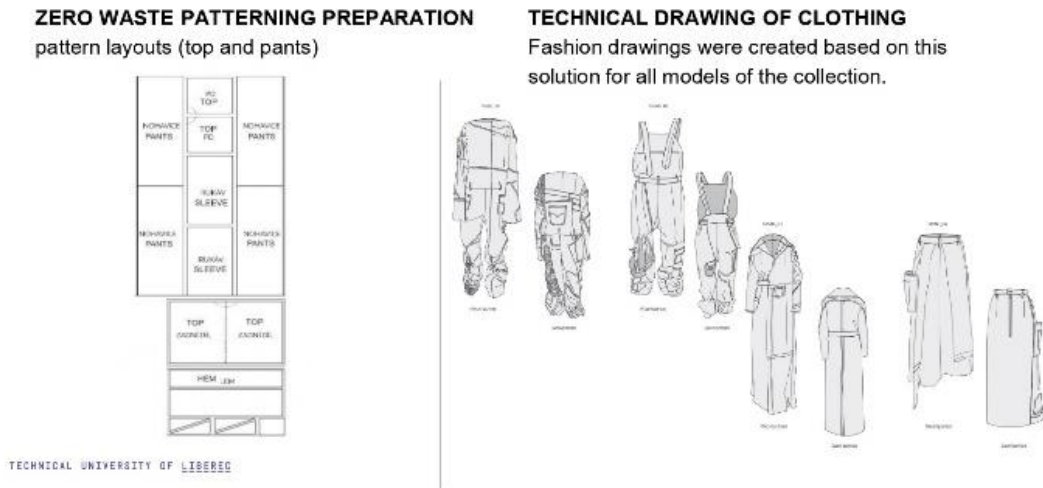


Figure 4. The process of creating a cutting solution and design drawing.

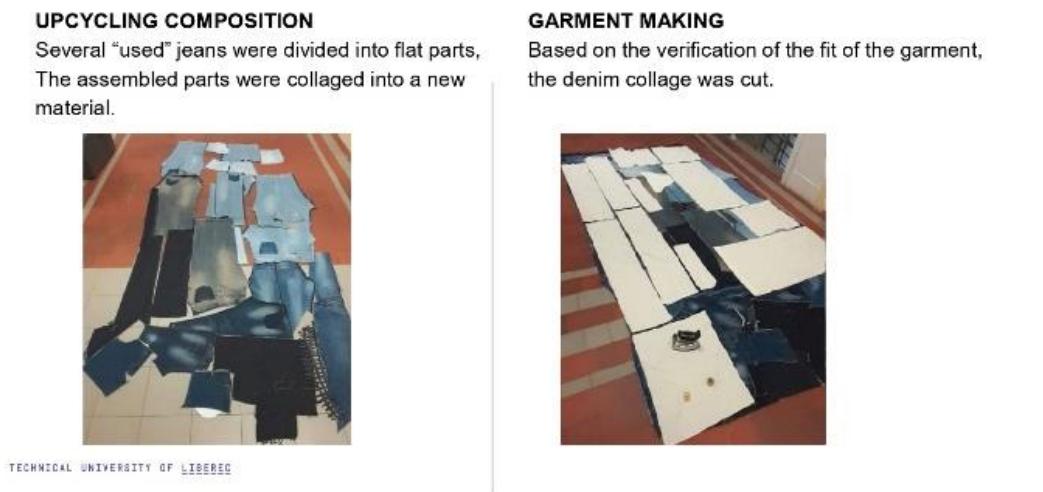


Figure 5. The creation process – authorial textile composition and positioning of the cutting solution.



Figure 6. Clothing prototypes in calico – verification of cutting solutions.

design process and demonstrates how recycled materials can be effectively used while maintaining the quality and originality of individual garments. A significant aspect of this approach is preserving the value of the original material and creatively transforming it into a new form, thus promoting sustainability in fashion design. [12]

The interactive process of design thinking includes verifying pattern solutions through prototyping in calico, which allows finalizing designs into functional and sustainable garments, see Fig. 6. In this way, the project demonstrates how fashion design can be approached creatively and effectively while being both sustainable and innovative. The resulting



Figure 7. Clothing collection – result.

**COMMUNICATION WITH AI**  
Creative proces of patern developing



Figure 8. Clothing designs – drawing – IA generated drawing.

clothing collection was tested for aesthetics, comfort, and functionality, which helped determine whether the designs met the actual needs of users. The insights gained were incorporated into the final design of the garments. Anna Střídová's clothing collection project was created as part of the Erasmus+ project: Sustainable Design and Process in Textiles for Higher Education (GreenTEX) [13], see Fig. 7.

**Integration of AI and advanced technologies**

The implementation of Design Thinking in education at TUL FT KDE also includes interdisciplinary projects. An example is the unisex clothing collection – the master's thesis of Kateřina Klozová, inspired by modern uniformity, which showcases the potential of combining fine arts, generative artificial intelligence, sustainable design practices, and the application of modern textile technology. Integrating AI into the design process allows students to explore new

creative possibilities within art practices. The thesis demonstrated how AI can be used to innovate garment silhouettes and pattern variations. In her unisex collection, the author creatively processed and combined waste camouflage materials with thermochromic pigments (pigments that change color depending on temperature). This interdisciplinary approach – merging new technologies with traditional textile techniques – expands the possibilities of sustainable design, making it both innovative and feasible.

One of the key aspects of the author's work was the interaction with AI in developing original patterns for textile printing. By combining digital direct printing and hand screen printing – used mainly for applying thermochromic pigments – unique pattern designs were created, see Fig. 8 and 9. This approach shows how the connection between technology and artistic research can enrich creative solutions in fashion design.



### INTERDISCIPLINARY COOPERATION IN TEXTILE PRINTING

Thermochromic pigments in the practice of experimental design.



Figure 9. Implementation of textile printing with thermochromic pigments.



Figure 10. Clothing collection – result.

The work also emphasizes interdisciplinary collaboration, particularly in textile printing and the application of new technologies. Experiments with waste camouflage material and thermochromic pigments in the patterns combine elements of art and science, pushing the boundaries of contemporary textile design. The collection, with its color aesthetics, aims to fit seamlessly into both natural and urban environments, see Fig. 10.

A significant part of this thesis project was the issue of sustainability and its relationship to aesthetics. The author focused on how AI can be integrated into the sustainable design process without compromising the aesthetic qualities of the garments. Her work emphasizes that innovative approaches can offer not only functional but also visually appealing solutions that address the needs of the contemporary fashion industry. This project represents a step forward in connecting technology, sustainability, and creative expression, setting the direction for further research and practice in the field of fashion design. The

process of developing each garment collection involves experimenting with shapes, proportions, and material tests to ensure that the silhouette smoothly aligns with the overall vision of the project. This careful attention to silhouette design strengthens the integration of abstract ideas into tangible outcomes, supporting the project's goal of merging aesthetics with usability. The garments were evaluated in terms of comfort, variability, and functionality, which allowed for verification of whether the designs truly meet the needs of the users. The findings were incorporated into the final designs of all four outfits and the final garment forms. [14]

### Ideas as the basis of creativity

The work presented in this subsection demonstrates the connection between the Design Thinking method and an innovative approach to fashion design, focusing on experimentation with form, materials, and function of garments, while emphasizing sustainability and aesthetics. The foundation of a

good design process is a strong conceptual idea that sets the path toward the established goals. The project by Štěpán Dittrt emphasizes the importance of pushing the creative boundaries of garment silhouettes while meeting sustainability criteria. This approach responds to the principles of "good design" according to Dieter Rams – creating products that are useful, aesthetic, and environmentally friendly. However, Štěpán Dittrt's playful design pushes the boundaries of product usefulness and confronts them with new aesthetics and functions.

Štěpán Dittrt's work expresses a vision that aims to expand the boundaries of traditional fashion design, especially within the academic environment. His approach promotes the value of exploration and experimentation, prioritizing the discovery of new solutions. Throughout the design process, the author repeatedly asked the question, "Is my design good?" The garment silhouettes designed by Dittrt are intended to showcase and encourage other students to go beyond the limits of conventional methodologies in fashion design practice. The new approach to garment silhouettes, combined with a strong conceptual vision, fosters a culture of creativity and ingenuity. In this context, the author's thinking, using

the Design Thinking method, becomes a laboratory for innovation, where the connection between conceptual thinking and practical execution can lead to groundbreaking results, see Fig. 11.

One of the defining characteristics of the methodology in artistic work is the emphasis on capturing the central concept or idea, which serves as the foundation for the subsequent development of designs. This idea is not static but cyclical, allowing concepts to evolve through continuous refinement. By repeatedly drawing inspiration, the author gains new ideas for forms, silhouettes, and functions. This project is an example of a dynamic approach to problem-solving in design. In addition to the idea, this project emphasizes the crucial role of developing the silhouette. Silhouettes serve as the primary visual language in fashion design, offering the first impression of a garment's shape and structure. Artistic techniques used to explore form, such as sketching, draping, and digital simulation, serve to deepen the understanding of material and silhouette. Such a holistic process ensures that the final result aligns with the goals of sustainable design while remaining visually striking and user focused [16], see Fig. 12 and 13.

#### CAPTURE AN IDEA AND LET IT INSPIRE YOU TO A NEW SOLUTION



Figure 11. Artistic inspiration for the clothing collection concept.

#### ELABORATE SILHOUETTES



Figure 12. Design drawing.





Figure 13. Clothing collection – result.

## RESULTS AND DISCUSSION

The text summarizes the results of innovative approaches in teaching sustainable design at the Department of Design, Faculty of Textile Engineering, Technical University of Liberec. The research confirms that sustainability is a key aspect of modern fashion design, and its teaching must combine theory with practice. The implementation of methods such as Design Thinking, Zero-Waste Fashion, or the integration of artificial intelligence (AI) has demonstrably contributed to the development of creative and responsible thinking among future designers. These creative approaches emphasize the importance of integrating sustainability into all aspects of design education.

Student projects show that, when appropriate methods are applied, it is possible to create innovative, functional, and aesthetically appealing fashion designs without compromising environmental values. The interactive process of Design Thinking allows students to address complex sustainability challenges in an empathetic, creative, and practical way. Practical implementation of creative approaches for sustainable design is presented through selected student projects. The Design Thinking method was used to create a unisex fashion collection inspired by stop-motion animation, emphasizing variability and minimal waste. Similarly, the Zero-Waste Fashion method, supporting circular economy principles and eliminating material waste during garment creation, demonstrates its suitability for use in higher education in creative projects. AI allows students to push the boundaries of creativity in the product design process. The integration of AI enables students to explore new creative possibilities within product design. Combining original design with generative AI and advanced textile technologies represents a

significant shift in experimental pedagogy, opening new opportunities for sustainability and innovation.

During work on creative projects, students realized the fundamental connection between theory and practice in the design process. Sustainable design is not just a concept but a mindset and an approach to design that influences every step of their work. The involvement of methods like Design Thinking and Zero-Waste Fashion taught them to approach problems in entirely new ways. The creative process also showed them the importance of understanding the complexity of design challenges. Creating aesthetically attractive garments that meet sustainability criteria was not easy. They had to deal with various limitations, material availability, and still maintain the practical and visual quality of the designs. This process gave them a deeper sense of connection with the overall philosophy of sustainable design, as they realized that every choice they make as designers has an impact.

As part of their artistic research, the team of educators at TUL FT KDE concluded that Bauhaus-inspired education and interdisciplinary collaboration at the university foster a diversity of creative processes, increasing the aesthetic value and functionality of the proposed garments. Bauhaus pedagogical methods, focusing on the connection between theory and practice, were transferred into a modern framework that combines interdisciplinarity and non-linear processes. Contemporary trends in art pedagogy at TUL FT KDE reflect interdisciplinary learning, where the creative process is linked with technologies, crafts, and environmental principles. These principles prepare students to responsibly address challenges such as global environmental issues.

The main results of the research include:

- Increased teaching effectiveness through the integration of sustainable methods and creative techniques.
- The opportunity for deeper student involvement in problem-solving and its practical application with a focus on circular economy.
- The use of new technologies as tools to enhance both the aesthetics and sustainability of designs.
- The support of empathy and critical thinking in student projects, leading to the creation of responsible design solutions.

Innovative pedagogical approaches at the Department of Design, FT TUL, demonstrated that creative education focused on sustainability is not only feasible but also essential for meeting the current needs of the fashion and textile industry. By combining Bauhaus philosophies, advanced technologies, and creative frameworks, a new generation of designers is being shaped, one capable of addressing contemporary environmental and social challenges. The results emphasize the importance of integrating art, technology, and ethics in modern pedagogy.

## CONCLUSION

Sustainable design education requires a dynamic and creative curriculum that reflects the complexities of environmental challenges. The use of frameworks such as Design Thinking and the introduction of innovative methods enables educators to prepare students for responsible design practice in the modern environment. The work of the Department of Design, FT TUL, serves as an exemplary model that combines tradition with innovation and shapes a new generation of sustainable designers.

The results of the conducted research highlight the key role of innovative approaches in teaching sustainable design. Pedagogical methods inspired by the Bauhaus philosophy have been adapted to the needs of the contemporary world, with the use of interdisciplinarity, advanced technologies, and the practical application of theory representing an effective way to form a new generation of responsible designers. Moreover, it strengthens interdisciplinary thinking and opens new paths for collaboration across scientific and creative fields.

The research clearly demonstrates that the integration of sustainable techniques and technologies into teaching not only facilitates understanding of their significance in practice but also contributes to creating a framework for responsible innovation in the design profession. This symbiosis of

creative and environmentally sensitive approaches represents a model that could be replicated in other educational institutions focused on artistic and craft disciplines.

In summary, the innovative pedagogical strategies implemented in the teaching at the Department of Design, FT TUL, represent a powerful tool for achieving sustainable goals in design, connecting the creative process with technological advancement, and shaping ethically responsible designers for the future. This educational model provides inspiring insights that can be applied internationally and helps address current challenges in both educational and industrial practices.

## REFERENCES

1. United Nations Decade of Education for Sustainable Development (2005-2014): international implementation scheme, 2005, 32 p., Document code: ED/DESD/2005/PI/01, online: <https://unesdoc.unesco.org/ark:/48223/pf0000148654> [cit. 7.1.2025]
2. Simon H. A.: The Sciences of the Artificial, Third edition, The MIT Press, 1996, 248 p., ISBN: 9780262691918
3. Brown T.: Change by Design: How Design Thinking Creates New Alternatives for Business and Society, HarperBusiness, 2009, 272 p., ISBN-10: 9780061766084
4. IDEO.org., The Field Guide to Human-Centered Design, IDEO/ Design KIT, 2015, ISBN-10: 0991406311
5. (ed.) Meinel C., Leifer L. J., Plattner H.: Design Thinking: Understand – Improve – Apply, Springer Berlin, Heidelberg, 2010, 238 p., ISBN: 978-3-642-13756-3
6. Wick R. K.: Bauhaus Pädagogik, DuMont Buchverlag, Köln, 1982, 100 p., ISBN-10: 3770112687
7. Valenta M.: Uměleckopřemyslová škola Bauhaus jako součást reformně-pedagogického hnutí, Pedagogika, 59(1), 2009, pp. 23-36.
8. Aslan J.: Výuka designu v kontextu vysokých škol, Praha, 2024, Dissertation Thesis (PhD.), Czech Technical University in Prague, Faculty of Architecture.
9. Nosálová A.: Oděvní unisex kolekce inspirovaná stop-motion animací, Liberec, 2024, Bachelor Thesis (Bc.), Technical University of Liberec, Faculty of Textile Engineering.
10. Von Thienen J., Traifeh H., Meinel CH.: Bring Home Methods: Additions to the Bootcamp Bootleg. Electronic colloquium on design thinking research, ECDTR, 1, 2018. <https://doi.org/10.46042/ecdtr1124>
11. Rissanen T.: Possibility in Fashion Design Education-A Manifesto, Utopian Studies, 28(3), 2017, pp. 528-546. <https://doi.org/10.5325/utopianstudies.28.3.0528>
12. Rissanen T., McQuillan H.: Zero Waste Fashion Design, Bloomsbury Publishing, 2018, 224 p., ISBN: 9781350094833.
13. Drašarová J., Veselá Z., Střídová A., et al.: Zero waste patterning in education of designers, Proceedigns of International Conference InnovaTex, 2023.
14. Klovová K.: Oděvní kolekce inspirovaná novodobou uniformitou, Liberec, 2024, Diploma Thesis (MgA.), Technical University of Liberec, Faculty of Textile Engineering.
15. Rams D.: Ten Principles of Good Design, Prestel, 2021, 416 p., ISBN-10: 3791387324.
16. Papanek V., Design for the Real World, 3rd edition, Thames & Hudson Ltd, 2019, 418 p., ISBN: 0500295336