

STOICA SIMONA FLORENTINA
BÎRSAN ELENA ADINA

CĂPĂȚÎNĂ MIHAELA
COJOCARU CARMEN



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**INTERDISCIPLINARITY,
CREATIVITY AND
RESILIENCE THROUGH
COLLABORATIVE
PROJECTS**



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INTERDISCIPLINARITY, CREATIVITY AND RESILIENCE THROUGH COLLABORATIVE PROJECTS

Coordinators

Stoica Simona Florentina

Bîrsan Elena Adina

Căpățână Mihaela

Cojocaru Carmen

Scientific Review Editor

Dominique Persano Adorno

University of Palermo, Italy

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FOREWORD

This volume brings together the scholarly papers and best practices presented at the International Symposium entitled “*Cultural Passport: Interdisciplinarity, Creativity and Resilience through Collaborative Projects*,” an academic event organized by Colegiul Economic „Virgil Madgearu” Galați in partnership with Erasmus Centre Seville and Teacher Resource Center (Casa Corpului Didactic) Galați. This scientific gathering was conducted under the broader umbrella of the European Union’s Erasmus+ Programme, serving as a core dissemination and reflection platform within the framework of the Erasmus+ School Education Accreditation Project No. 2025-1-RO01-KA121-SCH-000339215.

In a contemporary educational landscape marked by unprecedented algorithmic acceleration and profound socio-cultural shifts, the upper secondary education system is called upon to move beyond traditional, linear, and fragmented models of knowledge transmission. The major challenge for twenty-first-century educators is no longer the simple delivery of curriculum content, but the cultivation of global, reflective, and highly adaptable citizens. To address this paradigm shift, this anthology serves as a vehicle for pedagogical innovation, providing the Romanian pre-university educational community with an authentic space for professional dialogue, knowledge exchange, and methodological validation designed to consolidate an educational system that is highly competitive within the European Education Area.

The dynamic structure and academic density of this volume closely reflect the two strategic focus areas of the symposium:

The first section, “Interdisciplinarity and Creativity in Teaching and Learning” explores a fundamental shift in instructional design: the blurring of rigid disciplinary boundaries and assimilation of digital tools not as decorative elements, but as core analytical assets. The included papers investigate structural mechanisms through which cultural and linguistic heritage can be pedagogically leveraged, proposing field-tested workflows for integrated curricular design. Ranging from the use of artificial intelligence and synchronous platforms in media literacy newsrooms to transdisciplinary ekphrasis, active learning methodologies, and innovative assessment tools, this track demonstrates that learning becomes profound and sustainable only when organically bound to the student's multi-dimensional reality.

The second section, dedicated to “ERASMUS+ Projects” functions as a European-scale dissemination platform, evaluating the direct impact of transnational mobility frameworks (Erasmus+, eTwinning) on the development of key competences and soft skills among high school students and staff. The cross-border experiences analyzed in these pages reveal how immersion in multicultural environments fosters diversity, reduces performance anxiety, and accelerates peer-to-peer social inclusion. Beyond its immediate formative value, this section proves that international educational cooperation acts as a powerful incubator for systemic resilience, equipping modern schools with the strategic mechanisms necessary to navigate uncertainties and build sustainable bridges of cross-cultural trust.

The studies compiled in this volume collectively validate a definitive conclusion: museum-based outdoor education, digital micro-fiction, volunteerism, experiential storytelling, and applied STEAM prototyping workshops are not supplementary, extracurricular activities; they rather represent essential and lived experience learning. They effectively transition twenty-first-century students from passive consumers to responsible, ethical prosumers of media, culture, and science.

We express our profound gratitude to the Scientific Reviewer of this volume, **Prof. Dominique Persano Adorno**, from The University of Palermo, Italy for her invaluable academic guidance and rigorous evaluation of the manuscripts. We also extend our deepest thanks to the authors, researchers, and European experts whose vision and scholarly dedication have breathed life into this volume. Furthermore, we appreciate the coordinating institutions and managerial teams who understand that a modern, inclusive school is built upon openness, flexibility, and rock-solid international partnerships.

We are confident that the pages of this anthology will provide a valuable source of inspiration and a benchmark methodological guide for all educational stakeholders who believe in the transformative potential of collaborative networks, and who embrace, day by day, the noble mission of turning education into an authentic passport to the future.

The Editorial and Organizing Committee

STITCHING THE FUTURE: CREATIVITY, SUSTAINABILITY AND STEAM IN EUROPEAN EDUCATION

Dominique Persano Adorno¹ and Nicola Pizzolato²

*¹Department of Physics and Chemistry "Emilio Segrè", University of Palermo
Palermo, Italy*

² ICS Maredolce, Via Fichidindia 6, Palermo, Italy

Abstract

The growing need for sustainability education requires innovative pedagogical approaches capable of connecting different disciplines and engaging students in meaningful learning experiences. The Erasmus+ project **STITCH** (*Sustainability Through Innovation, Training, Creativity & STEAM Horizons*) addresses this challenge through an interdisciplinary educational model that integrates science, technology, engineering, arts and mathematics (STEAM) with sustainability and circular economy principles. Using sustainable fashion as a real-world context, the project promotes creativity, digital literacy, critical thinking, collaboration, and active citizenship through inquiry-based and technology-enhanced learning.

Keywords: STEAM Education; Interdisciplinary Learning; Creativity; Sustainability Education; Digital Innovation

Introduction

The environmental, social, and technological challenges characterizing contemporary society require educational systems to adopt innovative and interdisciplinary approaches capable of preparing students for an increasingly complex future. Sustainability education has therefore become a strategic priority within European educational policies and international agendas (UNESCO, 2021; European Commission, 2022). Schools play a fundamental role in this process by helping students understand the environmental, social, and economic dimensions of sustainability. Lower secondary education is particularly important because it represents a developmental stage in which young people begin to shape their values, attitudes, and consumption habits. Recent research highlights that sustainability-related competencies are more effectively developed when environmental topics are integrated across disciplines rather than taught as isolated subjects (Murphy et al., 2020; Persano Adorno et al., 2025a). In particular, cross-curricular approaches promote systems thinking, critical reflection, collaboration, and responsible decision-making, all of which are recognized as key sustainability competencies within the GreenComp framework (European Commission, 2022).

Within this context, the Erasmus+ project **STITCH** – *Sustainability Through Innovation, Training, Creativity & STEAM Horizons* proposes an innovative educational model that combines sustainability education, creativity, digital innovation, and STEAM teaching methodologies to create meaningful learning experiences for lower secondary school students.

Interdisciplinarity as a Catalyst for Meaningful Learning

Interdisciplinary learning is increasingly recognized as an effective strategy for addressing real-world challenges that cannot be understood through a single disciplinary perspective (Cebrián et al., 2020, Chalmers et al., 2022). Sustainability, in particular, requires learners to connect scientific, technological, social, economic, and cultural dimensions of contemporary issues. According to Persano Adorno et al. (2025a), sustainability can act as a powerful cross-curricular link capable of connecting different subject areas while maintaining strong educational coherence. This approach allows students to recognize the interconnected nature of environmental challenges and encourages the transfer of knowledge across disciplinary boundaries.

STITCH is an Erasmus+ Cooperation Partnership project (KA220-SCH) coordinated by the University of Palermo, Italy. The project brings together a multidisciplinary consortium including higher education institutions, schools, non-governmental organizations, and technology partners from six European countries. This collaborative structure ensures the development of educational resources that are scientifically sound, pedagogically effective, and adaptable to different educational contexts across Europe. The project runs from 2025 to 2028 and focuses on lower secondary education. The project's mission is to raise awareness of the environmental impact of fashion while promoting sustainable behaviours through innovative educational practices. The STITCH educational vision is based on the integration of Science, Technology, Engineering, Arts, and Mathematics (STEAM) within a thematic framework of creativity, innovation, and sustainability based on sustainable fashion. *Science* contributes to the understanding of textile materials, environmental impact, energy consumption, and sustainable production processes. *Technology* introduces digital tools, artificial intelligence applications, and innovative manufacturing methods. *Engineering* supports problem-solving and prototyping. *Mathematics* supports data analysis and measurement activities, while the *Arts* foster creativity, visual communication, design thinking and aesthetic awareness.

Sustainability education should move beyond the transmission of theoretical knowledge and provide students with opportunities to investigate real-world problems, design solutions, and reflect on the impact of their actions. Environmental challenges such as climate change, resource depletion, and waste management are interconnected issues that require interdisciplinary perspectives. In the STITCH project, the focus on fashion makes sustainability tangible and personally relevant. As young people interact daily with clothing and consumption choices, the topic becomes an accessible entry point for understanding broader environmental and societal issues. Moreover, the fashion industry is also among the sectors with the highest environmental impact, generating significant consumption of resources, energy, and raw materials. By exploring the life cycle of clothing and textile products, students can better understand broader sustainability issues and the principles of circular economy.

A Practical Example: The Physics of Fashion

One of the most innovative aspects of STITCH is its ability to reveal the scientific principles embedded in everyday objects. Fashion is not only a matter of aesthetics; it also involves physics, chemistry, engineering, and technology. Students explore topics such as textile properties, material resistance, heat transfer, elasticity, and sustainable material innovation. By understanding the science behind fabrics and garments, they learn how technology and research contribute to the development of more sustainable products. This approach demonstrates how STEAM education can connect abstract scientific concepts with real-life experiences, making learning more engaging, relevant, and meaningful (Persano Adorno et al., 2025b).

Creativity and Innovation in Teaching and Learning

Creativity is increasingly regarded as a fundamental competence for the twenty-first century (Henriksen et al., 2021). Contemporary educational research emphasizes the importance of learning environments that encourage exploration, experimentation, and innovation rather than simple knowledge transmission.

Within STITCH, creativity is not treated as an isolated skill but as a central educational principle embedded throughout the learning process. Students are encouraged to develop original solutions, create sustainable fashion prototypes, design awareness campaigns, and communicate environmental messages through digital media and artistic products. STEAM education provides a particularly suitable framework for nurturing creativity because it integrates analytical and imaginative thinking (Perignat & Katz-Buonincontro, 2021). By combining scientific inquiry with artistic expression, learners can explore multiple perspectives and develop innovative approaches to sustainability challenges. This pedagogical approach aligns with findings showing that interdisciplinary STEAM projects increase student engagement, motivation, and creative confidence while simultaneously improving problem-solving skills (Holmlund et al., 2022). The project therefore creates learning environments where curiosity, imagination, and innovation are valued alongside scientific rigor.

Also, digital technologies play a central role in modern educational innovation. Beyond supporting access to information, digital tools can facilitate collaboration, creativity, communication, and active learning (Henriksen et al., 2021). Research has shown that the integration of digital competence within sustainability education can enhance students' ability to analyze complex issues, evaluate information critically, and develop innovative solutions (Zhao et al., 2023).

The STITCH educational model integrates a variety of digital resources, including online learning environments, digital design tools, artificial intelligence applications, multimedia production platforms, and 3D printing technologies. In STITCH, technology is not treated as an end in itself but as a means to support sustainable innovation and creative problem-solving. Students learn how digital technologies can contribute to sustainable development while simultaneously strengthening their digital competence, media literacy, and communication skills. Furthermore, teachers benefit from dedicated digital resources, including a Teacher Resource Hub, online training opportunities, and interactive toolkits designed to facilitate the implementation of interdisciplinary learning activities. The pedagogical framework adopted by STITCH is grounded in inquiry-based learning and experiential education. Students investigate authentic sustainability challenges, formulate questions, collect information, test hypotheses, and evaluate solutions. This methodology encourages active engagement and promotes deeper understanding (Murphy et al., 2020, Boeve-de Pauw et al., 2022). Consequently, STITCH promotes active learning through sustainable fashion workshops, STEAM laboratories, collaborative design activities, and problem-based projects. Assessment practices are equally innovative. Rather than focusing exclusively on knowledge acquisition, the project emphasizes the evaluation of competencies through portfolios, prototypes, presentations, digital artefacts, reflective journals, and collaborative outputs. This competency-oriented approach is consistent with current recommendations for sustainability education assessment, which stress the importance of evaluating creativity, collaboration, systems thinking, and problem-solving abilities (Redman et al., 2021).

Building Communication Skills Through Collaborative Projects

Communication and collaboration are essential competencies for addressing sustainability challenges. Educational projects that involve teamwork, intercultural dialogue, and community engagement contribute significantly to the development of these skills (Brundiers et al., 2021).

Within STITCH, students collaborate in multidisciplinary teams to design solutions, create awareness campaigns, and disseminate sustainability-related messages through digital media. These activities strengthen communication skills while promoting environmental responsibility. The international dimension of the project further enhances learning opportunities. Through collaboration among partners from different European countries, students and teachers are exposed to diverse perspectives, educational traditions, and cultural contexts. Such intercultural experiences contribute to the development of European citizenship and reinforce the role of education as a space for dialogue, cooperation, and shared responsibility. The project's European consortium creates a learning ecosystem where collaboration, dialogue, and knowledge exchange become integral components of the educational experience.

Conclusion

The STITCH project represents an innovative response to the growing need for sustainability education in Europe. It demonstrates how sustainability education can become a catalyst for interdisciplinary learning, creativity, and educational innovation. By integrating STEAM methodologies, digital technologies, inquiry-based learning, and collaborative practices, the project provides an effective framework for developing key competencies required in contemporary society. Its educational framework transforms students into active learners, creative problem-solvers, and responsible citizens capable of understanding the complexity of sustainability issues and contributing to their solution. The project highlights the educational potential of sustainable fashion as a real-world context through which students can explore scientific concepts, technological innovations, environmental challenges, and creative solutions. At the same time, it promotes active participation, critical thinking, and responsible citizenship. Consistent with recent research on sustainability education and interdisciplinary teaching, STITCH illustrates how European educational projects can foster innovation in teaching while simultaneously promoting creativity, digital competence, intercultural dialogue, and environmental responsibility. In doing so, it offers a replicable model for schools seeking to prepare learners for the challenges and opportunities of the future.

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