

THE MEDITERRANEAN DIET AS INTANGIBLE HERITAGE: INTEGRATING CREATIVITY VALUE INTO BIOECONOMY CURRICULA

Chkoniya, Valentina; Vieira, Elisabete S.; Marques, Rui¹; Filipe, Sandra

GOVCOPP Unit Research, Aveiro Institute of Accounting and Administration, University of Aveiro (ISCA-UA), Aveiro, Portugal

ABSTRACT

The Mediterranean diet, recognized by UNESCO as an Intangible Cultural Heritage, transcends mere culinary tradition; it embodies a holistic lifestyle that emphasizes values such as knowledge, hospitality, intercultural dialogue, creativity, and respect for diversity. These principles have been passed down through generations in the countries bordering the Mediterranean Sea. Beyond its food components, the Mediterranean diet promotes sustainable agricultural practices, the preservation of biodiversity, and community resilience. In an era increasingly focused on global sustainability challenges, incorporating the creative and sustainable principles of this heritage into bioeconomy curricula can provide a path for transformative change. This paper explores how the values associated with the Mediterranean diet, along with innovative learning methodologies, can enhance bioeconomy education within Higher Education Institutions (HEIs). Using a narrative literature review, this study identifies 11 educational vectors that integrate creativity, sustainability, and interdisciplinary innovation based on the Mediterranean lifestyle: Interdisciplinary Modules, Experiential Learning Opportunities, Collaborative Research, Creative Methodology, Socio-Economic Dimensions of Bioeconomy in Curricula, Collaborative and Innovation-Focused Learning Environments, Cross-Cultural Exchange Programs, Interdisciplinary Sustainability Projects, Technology and Digital Tools, Collaboration with Local Communities. By aligning bioeconomy education with cultural heritage, this study proposes a framework for curriculum innovation that prepares future bioeconomy leaders to address global sustainability challenges.

Keywords: Sustainability, Curriculum Integration, Higher Education, Interdisciplinary Education, Cultural Preservation, Sustainable Food Systems, innovative learning, Creative Learning, Decision-making process, Cl4Bio

INTRODUCTION

This paper aims to examine how the Mediterranean diet as an Intangible Cultural Heritage can contribute to reshaping bioeconomy curricula through the lens of creativity and sustainability. The main objective is to propose an interdisciplinary framework that leverages cultural heritage to foster innovation, sustainability, and holistic education in Higher Education Institutions (HEIs).

The Mediterranean diet is well known as one of the healthiest eating patterns. However, its contribution transcends mere culinary aspects (Chkoniya et al., 2024). UNESCO's designation of the Mediterranean diet as an Intangible Cultural Heritage is based on the values it represents, including hospitality, intercultural dialogue, creativity, respect for diversity, and sustainable living practices (Vrontis et al., 2021; Wimpenny et al., 2022). These values pass from generation to generation in the countries around the Mediterranean Sea, creating the foundation for strong communities that emphasise care for the environment, support for local economies, and social unity (Biggi et al., 2024). The bioeconomy focuses on using renewable bio-resources to produce food, materials and energy, which are vital in solving the urgent global sustainability issues (Drejerska, 2024). Nevertheless, effectively integrating these principles into education requires creative and innovative methods. This paper investigates how the cultural and sustainable values of the Mediterranean diet can be integrated into bioeconomy curricula at HEIs, preparing the next generation of leaders to devise innovative solutions for global sustainability challenges.

RESHAPING EDUCATION FOR BIOECONOMY

Most of the academic research in the field of bioeconomy uses the traditional approach, with a focus on the environmental aspects of sustainability (Pink et al., 2024). This perspective frequently highlights the environmental advantages of bioeconomy initiatives, such as renewable energy, carbon emissions reduction and sustainable agriculture. Participants in various surveys generally show confidence in the favourable environmental effects that the bioeconomy can produce, especially in terms of resource efficiency and environmentally friendly practices (Parlato et al., 2024). However, there is a noticeable gap in awareness concerning the socio-economic dimensions of the bioeconomy, including its potential to drive economic growth and social wellbeing. As a result, the bioeconomy is frequently viewed solely through an environmental lens, with limited emphasis on the interdisciplinary connections between ecological sustainability and economic or social development (Trigkas et al., 2023).

HEIs play a leading role in advancing the objectives of the Green Deal. They are a catalyst for bioeconomy growth by contributing to technological innovations, strategies, and solutions that help the forward. By providing students and researchers with essential skills, HEIs accelerate environmental care, economic resilience, and social wellbeing (Kalnbalkite et al., 2022).

However, there is a lack of comprehensive research on the broader aspects of bioeconomy education, while environmental science is represented, socioeconomics, policy development, and bioeconomic innovation often remain underexplored (Coryton et al., 2022). The lack of integration of bioeconomy topics within HEI curricula increases this research gap since students are not exposed to the full range of subjects related to the bioeconomy, including its social, economic and innovation potential impact. Consequently, there is an opportunity to evolve teaching and research methodology that connects environmental sustainability with socio-economic growth. This requires an interdisciplinary understanding of the bioeconomy. The growing need for an integrated approach to bioeconomy research underscores the importance of curriculum innovation and collaborative frameworks that address environmental and socio-economic perspectives in bioeconomy education and practice.

MEDITERRANEAN DIET'S CONTRIBUTION TO THE BIOECONOMY

The Mediterranean diet contributes to public health and preserving cultural food traditions while addressing creativity and social and environmental challenges. It presents a practical and progressive approach to a sustainable, health-promoting lifestyle in turbulent times that the world is facing today (Sofi et al., 2025). This diet promotes sustainable agricultural practices, and seasonal eating with a strong emphasis on biodiversity and valorisation of local communities. These principles are aligned with the definition and main goals of the bioeconomy since they support the responsible utilization of natural resources (Torres et al., 2023). The focus on plant-based foods, seasonal and local ingredients, and minimizing the environmental impact in this way make the Mediterranean lifestyle provide significant insights into sustainable agriculture, food systems, and waste reduction (Fiore et al., 2024).

The diet's contribution to biodiversity preservation holds particular relevance in bioeconomy education, as it supports short supply chains by encouraging the use of fresh, natural, local and seasonal ingredients (Alexandri et al., 2023). By incorporating this heritage into educational curricula, students can better understand how agricultural practices prioritising ecosystem health contribute to long-term food security, climate resilience, and sustainable economic development (Matías et al., 2024; Papadopoulou et al., 2025). In addition, the Mediterranean lifestyle emphasises creativity and

community resilience, which holds potential to encourage students to be imaginative and develop innovative bioeconomy solutions inspired by regional customs.

CREATIVITY WITHIN BIOECONOMY EDUCATION

The resolution of complex bioeconomy problems requires creativity. Students need to be inspired to think beyond traditional disciplinary boundaries as they handle sustainability concerns (Vuojärvi H. et al., 2024). This creativity can be stimulated by innovative teaching strategies such as project-based learning, multidisciplinary teamwork, and experiential learning (Putri et al., 2024). One of the most appropriate frameworks for integrating creativity into bioeconomy courses could be the Mediterranean diet. Students can apply creative problem-solving techniques to adapt traditional knowledge to modern bioeconomic solutions by looking at the philosophy behind the diet (Sharma et al., 2024). Moreover, innovative teaching and creative learning methodology can help students understand how cultural heritage can inspire innovation in agriculture, food production, and the use of renewable resources.

METHODOLOGY

This paper follows the literature review method to analyse how the Mediterranean diet can be integrated into HEI bioeconomy curricula (Motevalli, 2024). The research considers several academic articles, case studies, and reports on the Mediterranean diet, bioeconomy, and creativity in higher education. The study focused on three factors:

1. Mediterranean Diet and Sustainability. This explains how the principles of the Mediterranean diet - such as sustainable farming, biodiversity preservation, and the promotion of local food economies - align with the objectives of the bioeconomy.
2. Creativity in Education. This section is focused on the role that creativity can play within bioeconomy curricula and examines how creative learning methods (for example, project-based learning and interdisciplinary collaboration) can contribute to improving the problem-solving skills of HEIs students.
3. Curriculum Integration. This section reviews case studies with examples of effective integration of cultural heritage and sustainability concerns into HEIs, particularly within the scope of bioeconomy. Special attention was given to innovation and interdisciplinary project opportunities.

DISCUSSION

This paper consolidates key tendencies in creative learning and bioeconomy and suggests a framework for integrating Mediterranean diet principles into HEIs curricula. Additionally, it provides actionable recommendations for HEIs aiming to innovate and adjust their educational approaches. The proposed 11 vectors of integrating creativity value into bioeconomy curricula through Mediterranean lifestyle were identified: Interdisciplinary Modules, Experiential Learning Opportunities, Collaborative Research, Creative Methodology, Socio-Economic Dimensions of Bioeconomy in Curricula, Collaborative and Innovation-Focused Learning Environments, Cross-Cultural Exchange Programs, Interdisciplinary Sustainability Projects, Technology and Digital Tools, Collaboration with Local Communities.

These findings align with previous research on interdisciplinary and cultural-based learning innovations (Shams et al., 2022; Kokkinopoulou et al., 2025; Vuojärvi , 2024). By incorporating the Mediterranean diet and its associated values, HEIs can offer educational experiences that reflect both regional heritage and global sustainability goals, consistent with previous studies in EuroMed Journal of Business.

CONCLUSION

The Mediterranean diet is one of the healthiest eating patterns in the world, which, according to UNESCO, extends beyond nutrition. It is closely related to the lifestyle, which, besides dietary choices, embraces cultural traditions, creativity, social interactions, and environmental aspects (Melguizo-Ibáñez H. et al., 2023; Okolo, 2025). Mediterranean lifestyle is proven through centuries and serves as an invaluable model for understanding sustainability within the context of the bioeconomy. The Mediterranean lifestyle transmits rich knowledge, sustainable practices, creativity, and cultural tradition relevant to the development of the bioeconomy. By integrating these values into curricula, HEIs can encourage innovation and interdisciplinary collaboration among students in a bioeconomy context.

This study contributes to the growing discourse on integrating sustainability and cultural heritage into business and economics curricula. It offers a novel framework for embedding Mediterranean diet values into bioeconomy education, thereby filling a gap in interdisciplinary curriculum design and aligning with Mediterranean-focused innovation literature (Fiore, 2021u; Vuojärvi et al., 2024). This approach is expected to support the next generation of bioeconomy leaders in developing sustainable solutions in the era of constant global challenges. The integration of cultural heritage with creative

values into education can help decision-makers of the future drive transformative change in the bioeconomy.

This paper consolidates key tendencies in creative learning and bioeconomy and suggests a framework for integrating Mediterranean diet principles into HEIs curricula. Additionally, it provides actionable recommendations for HEIs aiming to innovate and adjust their educational approaches by recommending 11 vectors of integration of creativity value into bioeconomy curricula through Mediterranean lifestyle were identified: Interdisciplinary Modules, Experiential Learning Opportunities, Collaborative Research, Creative Methodology, Socio-Economic Dimensions of Bioeconomy in Curricula, Collaborative and Innovation-Focused Learning Environments, Cross-Cultural Exchange Programs, Interdisciplinary Sustainability Projects, Technology and Digital Tools, Collaboration with Local Communities.

Interdisciplinary Modules

Existing literature reports cases under the framework of the Mediterranean diet, which create interdisciplinary courses by combining sustainable agriculture and cultural heritage within the bioeconomy. This allows us to comprehend how conventional methods can complement modern bioeconomy solutions. Promote collaboration among departments such as agriculture, environmental studies, economics, sociology, and cultural heritage and create a comprehensive learning experience.

Experiential Learning Opportunities

Develop fieldwork study in Mediterranean regions to enable students to directly observe and engage with traditional agricultural practices, local food systems, and sustainable farming methods. Collaborate with local Mediterranean communities or sustainable farms to establish internship opportunities where students can apply their theoretical knowledge in real-world contexts and use hands-on, creative learning methods.

Collaborative Research

The existing experience shows that research collaborations between HEIs and food system stakeholders benefits if implemented based on Mediterranean sustainability models, focusing on biodiversity, sustainable agriculture, and circular economies. It is important to encourage students to participate in research projects focused on the bioeconomic potential related to the Mediterranean diet and organize international workshops and conferences to bring together academics, practitioners, and

policymakers to exchange insights on integrating Mediterranean traditions into modern bioeconomy frameworks.

Creative Methodology

There is also a possibility to incorporate innovative teaching methods, such as design thinking and project-based learning, to empower students to solve bioeconomy challenges with creative solutions. There are examples of case studies that encourage exploration of artistic processes, including culinary arts and food design, that promote bioeconomy. Another opportunity is included in storytelling and underscores the cultural importance of the Mediterranean diet, inspiring students to express their learning through creative formats such as films, podcasts, and visual arts.

Socio-Economic Dimensions of Bioeconomy in Curricula

Revise curricula to include environmental considerations and the socio-economic dimensions of bioeconomy, such as job creation, local food systems, and economic resilience, mainly through the perspective of Mediterranean practices. Introducing courses focused on social innovation, entrepreneurship, and community resilience, highlighting how Mediterranean lifestyle values, such as neighbourliness and local cooperation, can inform and enhance contemporary bioeconomic models.

Collaborative and Innovation-Focused Learning Environments

Create innovation hubs or bioeconomy laboratories within universities that inspire students to explore and develop new ideas and solutions focused on sustainable agriculture, green technologies, and food systems, drawing from the Mediterranean model. Organise hackathons, innovation challenges, and sustainability competitions to foster students' creative thinking about applying Mediterranean traditions in bioeconomy settings.

Cross-Cultural Exchange Programs

Studies indicate that it is important to develop cross-cultural exchange programs that enable students to explore the philosophy behind the Mediterranean lifestyle across various cultural contexts. This initiative can help us to understand traditions in different bioeconomic systems. Additionally, it promotes Collaborative Online International Learning (COIL) that connects online students from Mediterranean countries with their peers in other parts of the world, fostering collaboration and enriching global learning experiences.

Interdisciplinary Sustainability Projects

There is a possibility to incorporate sustainability principles across different disciplines, and bring together students from different areas, such as economics, business, and engineering. This way, students are introduced to bioeconomy concepts, highlighting the values of sustainability, biodiversity, and social harmony inherent in the Mediterranean diet. Establish dedicated sustainability modules emphasising the interconnection between local food practices, the environment, and global bioeconomic trends, encouraging students to recognise sustainability as a fundamental, cross-cutting issue.

Technology and Digital Tools

There is an opportunity to integrate digital platforms and interactive learning tools to establish virtual classrooms where students can immerse themselves in Mediterranean agricultural systems and their bioeconomic implications. Encourage the use of digital storytelling and interactive virtual simulations to engage students with the effects of the Mediterranean diet on culture, food systems, and sustainability.

Collaboration with Local Communities

The HEI partnership with local communities, small food cooperatives, and farmers can provide students with real-world applications of bioeconomy and sustainability practices, aiming to establish community-based projects that allow students to work directly with stakeholders by using hands-on learning experiences.

CHALLENGES AND OPPORTUNITIES

Incorporating the Mediterranean diet into bioeconomy education presents various opportunities and some challenges. One of them is the gap identified between connecting traditional knowledge with modern practices. Numerous bioeconomy programs focus on technical abilities and scientific understanding, which can obstruct cultural and heritage-focused education integration. The interdisciplinary method to merge cultural heritage with sustainability and bioeconomy might also require extensive curriculum redesign and teacher collaboration. Despite challenges, HEIs have an opportunity to innovate their educational models by partnering with local communities, including food producers and cultural organizations. This provides students with meaningful real-world learning experiences that enable students to apply the principles of the Mediterranean lifestyle in

modern contexts, ultimately leading to the development of bioeconomic solutions that are both innovative and traditional with roots in cultural heritage.

CONCLUSION

The Mediterranean diet is one of the healthiest eating patterns in the world, which, according to UNESCO, extends beyond nutrition. It is closely related to the lifestyle, which, besides dietary choices, embraces cultural traditions, creativity, social interactions, and environmental aspects (Melguizo-Ibáñez H. et al., 2023). Mediterranean lifestyle is proven through centuries, and serves as an invaluable model for understanding sustainability within the context of the bioeconomy. The Mediterranean lifestyle transmits rich knowledge, sustainable practices, creativity, and cultural tradition relevant to the development of the bioeconomy, and by integrating these values into curricula. HEIs can encourage innovation and interdisciplinary collaboration among students in a bioeconomy context. This approach is expected to support the next generation of bioeconomy leaders in developing sustainable solutions in the era of constant global challenges. The integration of cultural heritage with creative values into education can help decision-makers of the future drive transformative change in the bioeconomy.

REFERENCES

Alexandri, M. et al. (2023). 'Residual biomass from major aromatic and medicinal flora of the Mediterranean: Challenges towards sustainable integration into food systems within the circular bioeconomy', *Trends in Food Science & Technology*, 139. doi:10.1016/j.tifs.2023.104123.

Biggi, C., Biasini, B., Ogrinc, N., Strojnik, L., Endrizzzi, I., Menghi, L., Khémiri, I., Mankai, A., Slama, F. B., Jamoussi, H., Riviou, K., Elfazazi, K., Rehman, N., Scazzina, F., & Menozzi, D. (2024). Drivers and Barriers Influencing Adherence to the Mediterranean Diet: A Comparative Study across Five Countries. *Nutrients*, 16(15), 2405. <https://doi.org/10.3390/nu16152405>

Chkoniya, V., Gregório, M. J., Filipe, S., & Graça, P. (2024). "From Olive Oil Lovers to Mediterranean Diet Lifestyle Followers: Consumption Pattern Segmentation in the Portuguese Context". *Nutrients*, 16(23), 4235. <https://doi.org/10.3390/nu16234235>

Coryton, D. (2022) 'The development of selective and comprehensive education', *Education Journal Review*, 28(2), pp. 14–40. Available at: <https://research.ebsco.com/linkprocessor/plink?id=a8adc12e-ecac-35b1-a48e-97c17441c130> (Accessed: 24 March 2025).

Drejerska, N., 2024. Rural inhabitants in the perspective of labour market challenges. *Annals PAAAE*, vol. XXVI, no. 1, pp. 69-81. <https://doi.org/10.5604/01.3001.0054.4245>.

Fiore, M., Galati, A., Figurek, A., Vrontis, D., & Thrassou, A. (2024). Overview of Agribusiness Managerial and Marketing Advancements. Springer International Publishing. https://doi.org/10.1007/978-3-031-45738-8_1

Fiore, M. (2021), "Food loss and waste: the new buzzwords. Exploring an evocative holistic 4Es model for firms and consumers", *EuroMed Journal of Business*, Vol. 16 No. 4, pp. 526-543. <https://doi.org/10.1108/EMJB-07-2020-0080>

Kalnbalkite A., Pubule J. and Blumberga D. (2022) 'Education for Advancing the Implementation of the Green Deal Goals for Bioeconomy', *Environmental and Climate Technologies*, 26(1), pp. 75–83. doi:10.2478/rtuect-2022-0007.

Kokkinopoulou, E., Papasolomou, I., Porcu, L. and Vrontis, D. (2025), "Exploring the impact of online co-creation on eudemonic well-being and sustainable fashion choices among Generation Z", *EuroMed Journal of Business*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/EMJB-12-2024-0356>

Matías, J. et al. (2024) 'From "Farm to Fork": Exploring the Potential of Nutrient-Rich and Stress-Resilient Emergent Crops for Sustainable and Healthy Food in the Mediterranean Region in the Face of Climate Change Challenges', *Plants* (2223-7747), 13(14), p. 1914. doi:10.3390/plants13141914.

Melguizo-Ibáñez, E. et al. (2023) 'Associations of Mediterranean Diet, Psychological Wellbeing and Media Pressure on Physical Complexion and Effect of Weekly Physical Activity Engagement in Higher Education', *European Journal of Investigation in Health, Psychology & Education (EJIHPE)*, 13(9), pp. 1600–1611. doi:10.3390/ejihpe13090116.

Motevalli, M. (2025) 'Comparative Analysis of Systematic, Scoping, Umbrella, and Narrative Reviews in Clinical Research: Critical Considerations and Future Directions', *INTERNATIONAL JOURNAL OF CLINICAL PRACTICE*, 2025(1), p. 9929300. doi:10.1155/ijcp/9929300.

Okolo, V.-O. (2025), "Would sales employees' customeroriented selling approaches stimulate customer satisfaction in the hospitality industry?", *European Journal of Marketing and Economics*, 7(2), 45–69. <https://doi.org/10.26417/2w7dam59>

Papadopoulou, C.-I. et al. (2025) 'Agricultural resources and practices in the circular bioeconomy adoption: evidence from a rural region of Greece', *Journal of Agribusiness in Developing & Emerging Economies*, 15(2), pp. 333–350. doi:10.1108/JADEE-12-2022-0284.

Parlato, M.C.M. and Pezzuolo, A. (2024) 'From Field to Building: Harnessing Bio-Based Building Materials for a Circular Bioeconomy', *Agronomy*, 14(9), p. 2152. doi:10.3390/agronomy14092152.

Pink, M. et al. (2024) 'Perception and awareness of the bioeconomy: an empirical study of chosen European academia', *International Journal of Sustainability in Higher Education*, 25(6), pp. 1137–1155. doi:10.1108/IJSHE-01-2023-0002.

Sharma, Y. et al. (2024) "Cultural Heritage Conservation in Urban Areas: Integrating Traditional Knowledge and Modern Planning Practices", *Journal of Applied Bioanalysis*, 10(2), pp. 260–265. doi:10.53555/jab.v10i2.181.

Shams, R., Galati, A., Vukovic, D. and Festa, G. (2022), "Editorial: Stakeholder causal scope analysis for strategic management of big data: implications for the European-Mediterranean region", *EuroMed Journal of Business*, Vol. 17 No. 3, pp. 289-294. <https://doi.org/10.1108/EMJB-09-2022-202>

Sofi, F. et al. (2025). Mediterranean diet: Why a new pyramid? An updated representation of the traditional Mediterranean diet by the Italian Society of Human Nutrition (SINU). Nutrition, metabolism, and cardiovascular diseases: NMCD, 103919. Advance online publication. <https://doi.org/10.1016/j.numecd.2025.103919>

Torres, A., Carvalho, P., Costa, J., Silva, C., Afonso, R. M., Nascimento, C., & Loureiro, M. (2023). Environmental Connection, Awareness, and Behaviors in University Students: An Exploratory Portuguese Study. *Sustainability*, 15(18), 13763.

Trigkas, M. and Karagouni, G. (2023) 'State/Academia Key Stakeholders' Perceptions Regarding Bioeconomy: Evidence from Greece', *sustainability* (2071-1050), 15(13), p. 9976. doi:10.3390/su15139976.

Vrontis, D., Christofi, M., Giacosa, E., & Serravalle, F. (2021). Sustainable Development in Tourism: A Stakeholder Analysis of the Langhe Region. *Journal of Hospitality & Tourism Research*, 46(5), 846-878. <https://doi.org/10.1177/1096348020982353> (Original work published 2022)

Vuojärvi, H. et al. (2024) 'Boundaries and boundary crossing in a multidisciplinary online higher education course on forest bioeconomy', *Teaching in Higher Education*, 29(5), pp. 1197–1214. doi:10.1080/13562517.2022.2122791.

Wimpenny, K. et al. (2022) 'Using open education practices across the Mediterranean for intercultural curriculum development in higher education', *Teaching in Higher Education*, 27(1), pp. 54–69. doi:10.1080/13562517.2019.1696298.