Digital Learning Hub for future green and ethical leaders: A mapping of educational initiatives related to sustainability in Higher Educational Institutes*

Maria Partalidou[1,†], Evie Kouroumichaki[2,†], Florian Ulm[3,†], Tiago Silva[3,†], Aleksandra Gulc[4,†], Joanna Godlewska[4,†] Justyna Kozłowska[4,†], Ewelina Tomaszewska[4,†], Irene Kalemaki[2,†], Ioannis Sotiriadis[2,*,†] and Dimitrios Vlachopoulos[5,†]

[1] *Aristotle University of Thessaloniki, School of Agriculture, Dep. of Agricultural Economics, 541 24, Thessaloniki, Greece*

[2] *Stimmuli for Social Change, 15 Agias Sofias, P.C. 54623, Thessaloniki, Greece*

[3] *Centre for Ecology, Evolution and Environmental Changes, CHANGE - Global Change and Sustainability Institute, Faculdade de Ciências da Universidade de Lisboa, Campo Grande, C2, 1749-016 Lisbon, Portugal*

[4] *Bialystok University of Technology, Bialystok, Poland*

[5] *Rotterdam School of Management, Erasmus University Rotterdam, Burgemeester Oudlaan 50 3062 PA Rotterdam, The Netherlands*

Abstract

Ethical business management practices (in terms of environmental, social, and economic ethics) are at the forefront of the public debate. Towards this direction, a critical question is whether Higher Education Institutions (HEIs) are prepared to contribute to the creation of future "green" and ethical leaders. Indeed, many institutions in Europe engage in the effort towards a socio-ecological transformation and are playing a pivotal role in utilizing methodologies of transformative education to enhance student's competencies, knowledge, and ethics towards a more sustainable and resilient future. This paper, outcome of the ERASMUS+ project PermaLABS (https://www.permalabs.eu/), tries to map educational initiatives related to sustainability in HEIs and then incorporate the principles & ethics of Permaculture into business and management studies which could further enable graduates capable of creating and leading sustainable, innovative, and resilient business that can better navigate the complex challenges of the modern world. Ultimately, learning materials such as syllabus, lesson plans, best practices from living labs and the creation of a digital social space for interaction among various stakeholders-students, business sector stakeholders, and citizens- would enhance peer-to-peer communication and cooperation and facilitate connections between academia and the business world, enabling students from different HEIs to exchange ideas and co-develop common projects.

Keywords

Permaculture, ethics, principles, Higher Education Institutions, sustainable business, management, training

1. Introduction

In a period of extreme changes in the labor market, and global pressure for more ethical management practices, organizations should be ready for changes towards more environmentally, socially, and economically ethical pathways [1]. The role of Higher Education Institutions (HEIs)

* *Short Paper Proceedings, Volume I of the 11th International Conference on Information and Communication Technologies in Agriculture, Food & Environment (HAICTA 2024), Karlovasi, Samos, Greece, 17-20 October 2024.*

* Corresponding author.

† These authors contributed equally.

parmar@agro.auth.gr (M. Partalidou); evie.kouroumichaki@stimmuli.eu (E. Kouroumichaki); ulm.florian@gmail.com (F. Ulm); tiagombs@gmail.com (T. Silva); a.gulc@pb.edu.pl (A. Gulc); j.godlewska@pb.edu.pl (J. Godlewska); j.kozlowska@pb.edu.pl (J. Kozłowska); e.tomaszewska@pb.edu.pl (E. Tomaszewska); irene.kalemaki@stimmuli.eu (I. Kalemaki); giannis-sotiriadis@hotmail.com (I. Sotiriadis); vlachopoulos@rsm.nl (D. Vlachopoulos)

0000-0001-6712-2094 (M. Partalidou); 0000-0002-1980-213X (E. Kouroumichaki); 0000-0002-1137-0651(F. Ulm); 0000-0002-6401-4765 (A. Gulc); 0000-0001-9538-7014 (J. Godlewska); 0000-0001-5164-4023 (J. Kozłowska); 0000-0001-6278-0194 (E. Tomaszewska); 0009-0003-9890-3493 (I. Sotiriadis); 0000-0002-2033-7343 (D. Vlachopoulos)

towards this effort is crucial. The first step is implemented already by some innovative HEIs that want to prepare their students as future green and ethical leaders. In fact, institutions in Europe have been playing a pivotal role in times of crisis and engage in efforts towards a socio-ecological transformation [2], utilizing methodologies of transformative education to enhance student's competencies, knowledge, and ethics for a more sustainable and resilient future. However, there is little evidence of new concepts and transdisciplinary approaches in academic syllabuses. The project entitled *"Envisioning sustainable futures in higher education business departments, inspired by Permaculture design principles"* (acronym: PermaLABS) tries to fill this gap.

When we talk about the concept of Permaculture, we refer to a design system for human habitats *"which mimics the patterns and relations found in nature"* [3]. Furthermore, the term "Permaculture" should be used when adhering to its inherent ethics and principles (Figure 1), which guide the system towards benefitting life in all its forms [4]. Incorporating Permaculture ethics and principles into business management studies could lead to better equipped graduates capable of creating and leading more sustainable, innovative, and resilient businesses and navigating the complex challenges of the modern world.

Figure 1: Permaculture ethics: People care, earth care, fair share. Source: https://permaculturepriciples.com/ethics/

The present paper brings a research effort for a place-based and experiential learning that will lead to a digital learning hub, inspired by Permaculture. This effort will serve as a steppingstone to prepare a capacity building program. The mapping of existing educational initiatives in Business and Management Departments of HEIs in the five European countries that are part of the project (The Netherlands, Greece, Portugal, Poland and Croatia) is not merely about cataloging these initiatives, but rather about gaining a nuanced understanding of their pedagogical underpinning, operational frameworks, and their potential impact on fostering a sustainability mindset among students and faculty members.

2. Methods and Material

The mapping of the initiatives used a qualitative approach with key-informants, experts' interviews (teachers/academic staff) by an online questionnaire, designed in a way to capture detailed information including objectives, methodologies, impact, and resources employed within HEIs. This structured approach facilitated a thorough analysis of each initiative but also enabled the comparison among different initiatives across the five partner European countries, thereby enriching our understanding of the diverse ways in which sustainability education is being approached in management and business education [5]. The research design focuses on the aspects of curricular and extracurricular activities, interdisciplinary approaches, community engagement, and innovative methods used. Responses from partner universities were gathered and analyzed with descriptive statistics and manual coding was conducted to foster in depth interpretive content analysis [6]. A major axis of the analysis advocates on the ways that current initiatives align with permaculture ethics, paving the way towards a more effective understanding of the integration level of permaculture in existing programs of study in Management and Business education. The codification consists of the following categories: type of activity of the initiative, challenges, opportunities, engagement of other community partners, methodologies employed, and finally the intended outcomes of the initiative.

3. Survey results

3.1. Initiatives and target groups per country

Almost all initiatives identified the "knowledge broadening on sustainability" as their major aim and most of the times these initiatives are supported by ERASMUS+ and/or other European projects embracing other stakeholders too, such as NGOs, Ministries, Innovation hubs, local businesses, municipalities, and local community bodies. For example, a free, open access MOOC in **Greece** introduces the concepts of sustainability and Ecological Footprint and an e-Learning course *"SPARKLE.eu"* enhances technical, business-oriented skills and entrepreneurial activity for students, in Greece and other four partner countries in the Mediterranean, while at the same time empowering critical thinking and social and cultural awareness. Other Greek initiatives place an emphasis on social innovations and new ethical business models, such as urban farming and social agro-food businesses, embedded in increased community participation and volunteerism.

The connection to Permaculture can be identified in all research/education/citizen science projects mapped also in **Portugal**, with hands-on initiatives concerning nature-based solutions, which are mainly connected to the ethics "Earth care" and "People care". *"Bioislands"* project, for basic green infrastructure and improved microclimate, two tiny-forest projects in the University of Lisbon (one of them the *"FCULresta"* is the first Miyawaki-type urban tiny forest) as well as the student's social initiative *"HortaFCUL"* promote education and sustainable development through the lens of permaculture.

In **The Netherlands** academics, students, and non-academic staff, are working collaboratively to cultivate an interdisciplinary culture, as for example in the case of the Rotterdam School of Management, Erasmus University, and the Design Impact Transition (DIT) platform that exemplifies this commitment by linking research and educationto the creation of a sustainable future. Some courses emphasize the critical importance of integrating entrepreneurship and the business environment within the framework of sustainability, aligning with the United Nations Sustainable Development Goals (SDGs) while at the same time aiming to generate also ecological and social value.

Permaculture ethics and principles in the case of **Poland** are met in several initiatives, such as the sustainable development *"My Green University"* at Bialystok University of Technology integrates permaculture to address contemporary global challenges (climate change, pollution, resource depletion, and biodiversity loss). The *"European Green Deal for Cities"* (EGD4Cities) initiative aims to strengthen the involvement of local authorities and non-governmental organizations in sustainable development and the green economy, primarily through educational and awareness-raising activities, while supporting leadership skills and creativity [7]. Other student-led initiatives, such as the *"Parcel for a Green Friend"* campaign, also play a significant role in fostering ecological consciousness [8].

Finally, in **Croatia** the Permaculture ethics are promoted through many programs in universities. From the initiative mapped, in many of the courses, emphasis is placed on finding innovations, often through student's participation in competitions aiming at enhancing and achieving sustainability and linked to entrepreneurship and ensuring a protected environment-ecosystem.

Overall, more than half of the initiatives mapped in all the HEIs are designed especially for their students. The following most important target group, is the group of academics, and educators in terms of "train the trainer". Finally, a handful of initiatives identified as target group the community members, towards having a wider impact. To that end one initiative also targets schoolteachers, providing a teachers' training opportunities (see table 1).

Table 1

Target groups of the initiatives

Target group	Number of initiatives
Students	22
Academics/educators	11
Community	7
School teachers	1

3.2. Permaculture Ethics, Activities and Outcomes

Almost all initiatives (22 out of 24) are linked to the Permaculture ethic **"Earth care",** indicating a common perception among all partner countries that sustainability is primarily associated with environmental issues. The ethic of **"People care"** is identified in half of the initiatives (12/24), suggesting that the human condition and community care are increasingly seen as an important element of sustainability. Lastly, only a handful of initiatives (8/24) deploy aspects of social economy and community building, which is associated with the third permaculture ethic **"Fair Share**".

The analysis indicates that workshops are one of the most used types of activity (for more than 30% of the initiatives), while formally established study courses are less than 30%, advocating on the need for a new approach and a new curriculum beyond the classical courses. Albeit there are many efforts to increase sustainability education concepts through different methodologies, such as research projects and informal training experiences, lectures etc. (Figure 2). Overall, the analysis highlights a diverse range of methodologies being employed across sustainability initiatives, with a notable emphasis on interactive, experimental, and real-world learning methods (Figure 3). Open discussions and workshops were the most popular, followed by the category of hands-on experience, used in 10 initiatives, which is also highly prevalent, emphasizing the importance of practical, experiential learning in sustainability education. The least chosen methodologies are those that have more innovative and specialized characteristics, such as the Miyawaki method, and the method of flipped classroom, or MOOCs. The percentage reflects that the adoption of innovative and diverse teaching approaches is less frequent, highlighting the opportunity to develop useful digital tools.

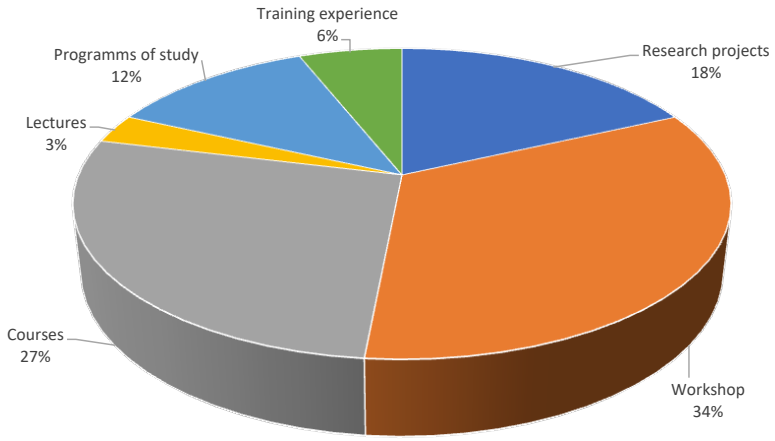

Figure 2: Type of activities within HEIs initiatives

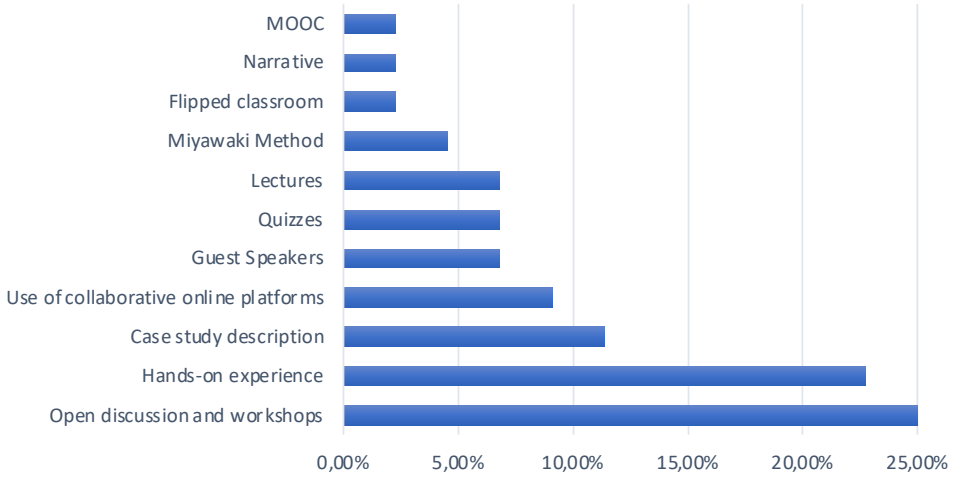

Figure 3: Type of methodology within HEIs initiatives

In terms of learning outcomes, primarily focus is given on knowledge and skills acquisition, with more than half of the initiatives emphasizing this aspect. Strengthening the ecological awareness of students and enhancing sustainability and environmental protection is the outcome of 5 out of the total 24 initiatives, whereas connecting people is prioritized in 4 initiatives. The remaining mapped outcomes relate to contact with nature, connection of entrepreneurship with sustainability, creation of a new training program and some generalized social outcomes in a handful initiatives.

3.3. Challenges and Opportunities

The most challenging issue (see Figure 4) that HEIs face is the lack of participants and volunteers. In other words, one out of three initiatives and/or projects have a difficulty in finding the "right" people to engage in such novel concepts. Administrative issues came up as the second most important challenge in terms of introducing and establishing the initiative within a strictly formatted academic structure with curricula, courses, and fixed semester protocols. This challenge was followed by lack of funding to support initiatives that fall outside the mainstream organization of the courses in an academic institute. Overall, the abovementioned challenges go hand in hand with bureaucracy and strict internal protocols, which were mentioned as another challenge albeit covering the same strand of barriers. Apart from the above, other barriers such as linguistic, time constraints, appear to be the least challenging problems for the sustainable initiatives mapped.

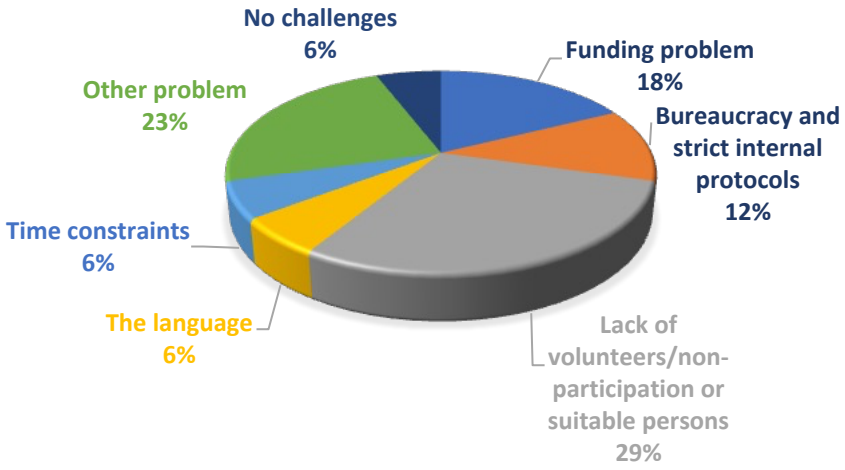

Figure 4: Challenges mapped in HEIs (number of times mentioned out of the 24 initiatives)

Nevertheless, there are future opportunities, as the upscaling of initiatives was pointed out in all countries, as well as teacher's trainings, meaning peer- to-peer learning and exchanges within academic staff; activities supporting also by ERASMUS and other European initiatives.

4. Discussion

Embedding Permaculture ethics and principles into higher education curricula presents a significant opportunity to address systemic and non-linear sustainability challenges, dismantle siloed thinking, and promote cross-disciplinary collaboration. This approach fosters a culture of environmental, social, and economic responsibility. The mapping of initiatives by Higher Education Institutions (HEIs) in the five partner countries of the PermaLABS project highlights efforts to integrate sustainability ethics into business schools, despite the challenges and obstacles associated with traditional courses.

There is an evident need for developing evidence-based resources for teaching staff, providing them with the knowledge and methodologies-tools necessary to design and deliver lessons aligned with the PermaLABS approach. These resources should include learning materials such as syllabus, lesson plans, and best practices from living labs. Additionally, a set of co-created activities, developed in collaboration with students and experts, featuring permaculture-based businesses, lesson plans, and infographics, could bridge the gap in available tools and methods.

Creating a digital social space (a learning hub) for interaction among various stakeholders—students, business sector stakeholders, and citizens—would enhance peer-to-peer communication and cooperation. This platform would facilitate connections between academia and the business world, enabling students from different HEIs to exchange ideas and co-develop common projects; but more importantly empower the green and ethical leaders of the future.

Acknowledgements

PermaLABS project entitled *"Envisioning sustainable futures in HEI business and management departments, inspired by Permaculture principles"* is funded by the European Union within ERASMUS+ program [https://www.permalabs.eu/]. The project number 2023-1-NL01-KA220-HED-000157951 is coordinated by Erasmus University – Rotterdam School of Management.

Disclaimer: Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Declaration on Generative AI

The author(s) have not employed any Generative AI tools.

References

[1] S. Böhm, M. Carrington, N. Cornelius, B. de Bruin, M. Greenwood, L. Hassan, T. Jain, C. Karam, A. Kourula, L. Romani, S. Riaz, D. Shaw. Ethics at the Centre of Global and Local Challenges: Thoughts on the Future of Business Ethics. Journal of Business Ethics (2022) 180:835–861 doi: https://doi.org/10.1007/s10551-022-05239-2.

[2] A. Novy, The political trilemma of contemporary sociolecological transformation – lessons from Karl Polanyi's The Great Transformation, Globalizations, (2022) 19:1, 59-80, doi: 10.1080/14747731.2020.1850073.

[3] D. Holmgren, Principles & pathways beyond sustainability. Holmgren Design Services, Hepburn, (2002).

[4] B. Mollison, Permaculture: a designer's manual, CABI Digital Library, Tyalgum, New South Wales, Australia (1988).

[5] R. Shawe, W. Horan, R. Moles, B. O' Regan, Mapping of sustainability policies and initiatives in higher education institutes. Environmental Science & Policy, volume 99. Pages: 80-88. University of Limerick, Ireland (2019) doi: https://doi.org/10.1016/j.envsci.2019.04.015.
[6] Earl R. Babbie. The Practice of Social Research, 13th Edition Cengage (2020).
[7] Sustainable Strategy, "My Green University", Bialystok University of Technology, Bialystok, Poland, 2024 URL: https://pb.edu.pl/moja-zielona-politechnika/en/.
[8] European Green Deal 4 Cities, 2021 URL: https://designaturegr.wixsite.com/egd4cities.
[9] New trees on the WIZ campus, The "Plot for a Green Friend" campaign, Faculty of Management Engineering, Bialystok University of Technology 2021 URL: https://wiz.pb.edu.pl/2021/11/03/nowe-drzewa-na-kampusie-wiz/.