Cultivating a Sustainable Mindset in Higher Education

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Recognizing the critical role that sustainability plays in shaping the future, this study examines various strategies for embedding sustainability into extracurricular programs to enhance student awareness, engagement, and action. This paper highlights successful initiatives that promote environmental stewardship and social responsibility, demonstrating that incorporating sustainability into extracurricular activities not only enriches the educational experience but also nurtures a generation of mindful and proactive leaders. By fostering and encouraging thereby cross-disciplinary collaborations, educators are called to action to prioritize sustainable development in different aspects and areas, ensuring the next generation is equipped to tackle global challenges and contribute to a sustainable future.

DOI
https://doi.org/10.18690/um.fov.2.2025.70

ISBN
978-961-286-963-2

Keywords:
sustainability,
higher education,
extracurricular activities,
cross-disciplinarity,
global challenges

University of Maribor Press

1 Introduction

Sustainability is no longer a peripheral concern but a central tenet that shapes the future of our society. Higher education institutions (HEIs), as the breeding grounds for future leaders, play a pivotal role in integrating sustainability into various aspects of student life (Hrustek et al., 2024). Although there is an expectation to focus heavily on incorporating sustainability into academic curricula, many higher education institutions (HEIs) - especially if sustainability related topics are not their primary field of education - may perceive this as a lengthy and exhausting process that involves changing study programs and implementing extensive accreditation procedures. On the other hand, creating and conducting extracurricular activities offers a unique and impactful approach to integrating new research and study areas, such as environmental and social responsibility, into the learning process in a much simpler and faster way.

Integration of sustainability principles into extracurricular programs at higher education institutions, aims to elevate student awareness, engagement, and proactive action towards a sustainable future. By embedding sustainability into extracurricular activities, institutions can cultivate a mindset that values environmental stewardship and social responsibility, providing students with practical and collaborative experiences that complement their academic knowledge (Filho et al., 2019).

This paper firstly provides a background of existing research dealing with the role and importance of incorporating sustainable principles in in the context of higher education. Afterwards, three successful examples are presented, highlighting the transformative potential of extracurricular activities in shaping a sustainable mindset. By fostering thereby cross-disciplinary collaborations and encouraging innovative approaches, the goal is to equip the next generation with the skills, knowledge, and values necessary to address global challenges and contribute meaningfully to a sustainable and equitable future.

In concluding remarks, an overview is given on lessons learned, emphasizing that initiatives like described experiences can ensure long-term benefits and create ideas for new initiatives and projects.

2 Background

Sustainability and integrating sustainable practices into business and social systems are crucial for modern progress. The 1987 Our Common Future report (United Nations (1)), defines sustainability as meeting today's needs without compromising future generations' ability to meet theirs. This calls for a shift in awareness and practices among all stakeholders. As a follow-up to the initiative, in 2015, United Nations Member States adopted the 2030 Agenda for Sustainable Development (United Nations (2)), which outlines 17 Sustainable Development Goals (SDGs) to guide global peace and prosperity. These goals are meant to be integrated into the activities of individuals, companies, public institutions, and governments, encouraging collective action to reduce poverty, improve health and education, reduce inequality, stimulate economic growth, and address climate change (United Nations, n.d.).

The concept of Environment, Social, and Governance (ESG) encompasses aspects of responsible governance, including environmental, social, and corporate governance issues, and is used to assess the sustainability and ethical impact of companies and institutions (Usak et al., 2021).

The European Commission's Recommendation on Learning for the Green Transition highlights the importance of integrating sustainability into education and training (European Union, n.d.). Key actions, such as prioritizing green education, advancing research, and investing in sustainable resources, enable HEIs to create practical, interdisciplinary learning environments that prepare individuals to implement sustainable practices and foster a culture of sustainability.

3 Examples on how to implement Sustainability into Extracurricular activities

Extracurricular activities play a vital role in the holistic development of students. They offer opportunities for personal growth, skill development, and social engagement outside the traditional academic curriculum. By participating in these activities, students can explore their interests, develop leadership and teamwork skills, and build a sense of community. Extracurricular activities also provide a

practical context for applying academic knowledge, fostering a well-rounded educational experience that prepares students for future challenges.

In the next subsections, three examples are presented, showing how extracurricular activities can be created and performed, encompassing sustainable principles.

3.1 Student Competition on solving Sustainability Challenges

A student competition was conducted in May 2024 in Varaždin, Croatia, as part of a broader initiative, entitled Global Goals Jam (Global Goals Jam, n.d.), where makers and designers create impactful solutions for the Sustainable Development Goals. In this initiatives, local organizers, such as universities and NGOs, can host a Jam and collaborate with industry partners to tackle global challenges (Digital Society School, n.d.). A toolkit and online training to guide the design process is provided, as presented in Figure 1.

Figure 1: Tools for the design process
Source: (A Green Step Forward, 2024)

The competition was organized as an intensive two-day event, during which students collaborated to develop sustainable and socially responsible concepts. Students were organized into teams of four and given a task to identify a local community problem. Each team was required to analyze and discuss the issue, and then propose a solution. The competition focused on developing innovative ideas and concepts that integrate sustainable development principles and social responsibility. Teams were encouraged to use digital technologies to enhance efficiency, drive innovation, and

deliver meaningful value to stakeholders. Learning outcomes for students were as follows, derived from (Mintz & Tal, 2014), (Abo-Khalil, 2024):

- Development of Professional Competencies: Acquire knowledge of sustainability principles, social responsibility, as well as digital technologies, and learn to integrate these concepts into business processes.
- Practical Skill Enhancement: Apply theoretical knowledge to real-world problems by analyzing challenges and designing sustainable solutions.; Strengthen presentation skills through structured prototyping and pitching of solutions.
- Fostering Creativity and Innovation: Develop innovative ideas using digital tools and physical prototyping techniques to solve complex issues effectively.
- Improvement of Teamwork and Collaboration: Collaborate effectively with peers, leveraging diverse skills and perspectives to achieve common goals.
- Increased Social Awareness: Gain a deeper understanding of local community challenges and the importance of contributing to society through sustainable and socially responsible.

The competition was structured into four sprints, each lasting 1 hour and 30 minutes. The sprints and the elements of each sprint are listed and explained below:

Sprint 1: Explore it! Do a datajam! → (a) Problem clarification, (b) Data insights into the problem, (c) Visualization of the problem, (d) Sustainability Impact, (e) Comparison with others.

Sprint 2: Respond to it! Create a lo-fi prototype! → (a) Create a sketch or visualization of the problem data related to sustainability and community (infographic, sketch, prototype), (b) Quickly brainstorm how to make your key insight visible or tangible, (c) Develop a quick draft prototype of your idea, (d) Ask another team to test your provocative prototype and gather feedback.

Sprint 3: Make it! Make your final idea tangible! → (a) Create a new version of your prototype, making it as realistic as possible, (b) Think about how you will share your final object with others to create a meaningful experience.

Sprint 4: Share it! Document your process and share your object! → (a) Prepare for presentation, (b) Present or pitch your solution, (c) Identify the Sustainable Development Goals your solution supports, (d) Explain benefits for the community gained from your proposed solution (Sugita, 2018).

At the end of the sprints, teams presented their work in a brief pitch lasting 5 to 8 minutes, which was thoroughly reviewed and evaluated by a panel of judges based on predefined criteria.

The mini-competition provided students with hands-on experience in applying sustainability principles to real-world challenges and collaborating in teams to generate creative solutions. This approach ensured a comprehensive learning experience, combining theoretical knowledge with practical application to empower students as future leaders in sustainable business practices.

3.2 Erasmus Blended Intensive Program on Sustainable development

The Erasmus+ program for the period 2021-2027 is offering a funding opportunity for development of Blended Intensive Programs (BIPs) (European Commision, n.d.). BIPs, in order to be eligible for funding, have to include a minimum of 3 international partners, a minimum of 15 international learners from participating partners (and beyond), have to be performed as a combination of online and onsite classes, and address an emerging topic not already included in study programs offered by partners (For the 2nd Time FOI Teachers Organized an Erasmus+ Blended Intensive Program (BIP) „Transform to Sustain, 2023).

A BIP entitled: "Transform to sustain: Sustainable future enabled by digital transformation" was held twice, in May and June, 2022 and 2023, through 5 weeks of online classes, and one week of onsite classes, in Split, Croatia, end of June 2022 and 2023, as presented in Figure 2.

The program aimed to familiarize students with creative methods and techniques for analyzing customer needs, identifying opportunities for change, and enhancing business by designing new sustainable models. The focus was on developing

innovative ideas through modern digital technologies, driving digital business transformation.

Figure 2: Transform2Sustain BIP
Source: (For the 2nd Time FOI Teachers Organized an Erasmus+ Blended Intensive Program (BIP) „Transform to Sustain, 2023)

The goals were achieved by integrating four key concepts: digital transformation, sustainable development, digital technologies (including AI and robotics), and the management of organizational and business processes. The program utilized creative and modern teaching methods such as problem-based learning, gamification, teamwork, and project tasks to foster a collaborative environment where students could learn from both lecturers and each other. Learning outcomes for students were:

- Comprehend and enforce creative methods, techniques and tools for customer needs analysis and innovative ideas creation.
- Understand and apply the basic concepts of artificial intelligence.
- Propose a new digital and sustainable business model of an organization.

The intensive program's online sessions were held every Monday and Thursday evening. By the second week, students were grouped into international, multidisciplinary teams, working on practical tasks, case studies, and a team project to develop an innovative, sustainable digital solution to an SDG-related problem.

During the onsite week, students continued team collaboration through interactive workshops provided by partner institutions, enhancing online knowledge with creative teamwork. They also tested their skills and gained knowledge on a real-life example in an unfamiliar Croatian island location, addressing EU-relevant challenges. At the program's end, teams presented their solutions and received feedback from teachers and peers on the successful realization of the program's learning outcomes.

The vision for this BIP was to pursue innovative strategies for a sustainable future through co-creation. It gave the opportunity to build great international networks, extending beyond the program.

3.3 Cross-disciplinary collaboration for World Environment Day

Three faculties of the University of Zagreb - Faculty of Geotechnical Engineering (GFV), Faculty of Textile Technology (TTF) and Faculty of Organization and Informatics (FOI), - celebrated World Environment Day together in Varaždin, as presented in Figure 3.

The event, named "Our Country. Our Future. We are #GenerationRestoration", centered around land restoration, combating desertification, and drought resistance. It was designed to educate people of all ages, especially children and young people, about environmental protection through a variety of engaging activities such as educational content, interactive quizzes, and experiments. Graduates also had the chance to explore further education opportunities in Varaždin.

During the two-day event (June 4-5, 2024), participants of all ages gained insights into the importance of bees, eco-friendly cleaning methods using natural materials, and constructing earthquake-resistant buildings. Students and teachers from GFV shared their research on individual contributions to environmental protection. TTF students' exhibits, created in collaboration with industry partners in Footwear Design, attracted significant interest. TTF also highlighted projects through workshops and demonstrations of eco-friendly sports shoes. FOI showcased its dedication to environmental protection by presenting students' innovative ideas from the "Global Goals Jam" competition and promoting sustainable practices. Young attendees enjoyed playing video games focused on sustainability.

Figure 3: World Environment Day together in Varaždin
Source: (Three Faculties of the University of Zagreb Together for Environmental Protection, 2024)

World Environment Day, organized by the United Nations Environment Program (UNEP), has been celebrated annually on June 5 since 1973 and has become one of the largest global platforms for environmental protection. Each year, millions of people participate both online and in-person to promote environmental action worldwide.

4 Conclusion

HEIs play a key role in this transformation by preparing future generations for life and work. Traditionally, HEIs focus on responding to employer and market needs. However, they must now integrate sustainability into their learning programs to address emerging challenges effectively.

Good practices can and should be adapted to educational and scientific institutions by incorporating the concepts of sustainability into the curriculum or additional extracurricular activities. It is desirable that teachers in their specific educational and scientific domains consider how, through the development of knowledge, skills and experience, they can contribute to the achievement of economic, environmental and social sustainability and social responsibility towards all stakeholders in the community. In the long term, through such activities, students would be taught that as future creators of solutions in the market, they develop sustainable solutions tailored to all stakeholders in the community. All such solutions should target the contribution to the economic, environmental and social goals of sustainable development.

Integrating sustainability and fostering a mindset of respect for it within higher education institutions (HEIs) can be achieved through various methods. Lessons learned from presented experiences in this paper, which should guide future endeavors, are:

- Incorporate sustainability into a variety of programs and disciplines for ensuring that all students, regardless of their field of study, are exposed to sustainability principles
- Adapt learning activities to align them with the specific needs and goals of different educational and scientific domains
- Encourage collaboration between different departments or institutions to create interdisciplinary projects, enabling students to apply sustainability concepts in different contexts
- Focus on alignment with the Sustainable Concepts: Developing projects that are explicitly aligned with specific SDGs or other sustainable practices, enabling students to address global challenges in a structured way
- Promote awareness om how different disciplines can contribute to economic, environmental, and social sustainability
- Involve community stakeholders (city, county, organizations) in defining project problems, ensuring that solutions are directly relevant and useful to the local context
- Use feedback loops from stakeholders to improve learning practices
- Track and evaluate the results of implemented solutions over time, creating case studies or best practice guides for future iterations
- Include reflective exercises, where students analyze the sustainability and adaptability of their solutions over the long term
- Encourage students to view sustainability as a continuous learning process that goes beyond their academic journey, preparing them to be adaptable and responsible professionals
- Encourage teacher participation and recognize and reward educators who successfully integrate sustainable and adaptive practices into their teaching
- Create a network of institutions and educators who share best practices, resources, and experiences to continuously improve the adaptability and sustainability of such approaches (implementation in the next period)

– Organize regular conferences, webinars, or hackathons focused on sustainability in education.

These ideas aim to make practices not only adaptable across contexts, but also sustainable in terms of long-term educational and societal impact. By bridging the gap between theory and practice, this study underscores the importance of an integrated educational experience that nurtures mindful and proactive leaders. It is through such holistic approaches that higher education institutions can truly champion sustainability and inspire students to become catalysts for positive change in their communities and beyond.

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Summary

The integration of sustainability and sustainable practices into higher education institutions is essential for fostering student awareness and comprehension of the critical need to create a better future. This encompasses efforts to reduce poverty, protect natural resources and biodiversity, mitigate climate change, improve health and education services, and address other vital aspects of economic, ecological, and social sustainability. Sustainability should be integrated into the curriculum and activities of all educational institutions as an interdisciplinary framework that complements and enriches every discipline. Extracurricular programs significantly enhance this endeavor, offering distinctive opportunities for active engagement and practical application. This paper presents initiatives of how higher education institutions can effectively incorporate sustainability into their teaching practices. Initiatives such as a short competition conducted over four sprints, a blended intensive program (BIP), and cross-disciplinary collaboration for World Environment Day were presented. These initiatives illustrate how sustainability education equips students with discipline-specific knowledge and skills while promoting a comprehensive understanding of sustainable development.