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Integrating Green Citizenship in Higher Education Curricula: The Case of a Transversal and Interdisciplinary Course on Environmental Communication and Sustainability

Adina BAYA*, Corina TURȘIE**

Abstract

The increasing urgency of addressing environmental challenges and the vital role of higher education in cultivating active green citizenship represent two key arguments supporting the necessity of innovative curriculum approaches with broad student accessibility. Across the globe, leading international organizations have emphasized the critical importance of environmental education as a fundamental driver for achieving sustainable development, going beyond specialized courses to become a transversal component of university curricula. However, many higher education institutions still lack accessible and interdisciplinary course offerings that address green citizenship in a competence-based and practice-oriented approach, especially for students from varied educational backgrounds. Our paper presents a case study of the design, implementation, and evaluation of a transversal university course that responds directly to this gap, aimed at cultivating green citizenship among students across all faculties from the West University of Timișoara, Romania. The course is aligned with international commitments such as the UN's 2030 Agenda, aiming to develop environmentally conscious graduates prepared to engage critically in ecological and civic challenges. Drawing on an interdisciplinary pedagogical framework that combines communication science—particularly media literacy and media content production—with environmental science, the course integrates theoretical knowledge with practical applications. Social media platforms are employed as a key pedagogical tool, enabling experiential learning through content creation, public engagement, and critical reflection on digital environmental communication. The course aims to empower students to better understand the urgent challenges currently facing the environment, as well as to equip them with the necessary skills to become proactive in addressing them.

Keywords: green citizenship; environmental communication; social media; environmental education.

* Phd Lecturer, West University of Timișoara, Romania, adina.baya@e-uyt.ro

** Phd Lecturer, West University of Timișoara, Romania, corina.tursie@e-uyt.ro



1. Introduction

Higher education institutions from all over the world face the challenge of offering the practical competencies needed to address the environmental emergencies facing our planet, while leading international organizations such as UNESCO, United Nations (UN), and the European Union (EU) advocate for integrating environmental education as a transversal component of the curricula, addressing wide student audiences in an accessible way. However, conventional teaching programs often lag behind and fail to attract students from diverse specializations and remain relevant. In order to meet the growing demand for fostering green citizenship – built at the intersection of environmental awareness, commitment to a sustainable lifestyle and civic engagement to address ecological crises –, universities must adopt innovative pedagogical strategies that are connected to the societal transformations that contemporary students will need to face. Moreover, effective environmental communication must reach beyond echo chambers and engage a broad range of student audiences, including those who specialize in domains that have no connection to the topic. As specialists present at a panel discussion at the International Journalism Festival highlight, “we have to make content for people we don’t make content for.” (IJF, 2023). In other words, universities are confronted with a pressing responsibility to equip their students with the ability to present complex environmental issues in an informed, relatable, and persuasive way through accessible platforms that reach wide audiences.

The present study asks how universities can integrate green citizenship into higher education curricula through an accessible course that uses digital and social media tools to strengthen environmental awareness, critical evaluation, and sustainable action. To address this question, we present the detailed case study analysis of a pioneering transversal and interdisciplinary course designed to meet this demand. Combining theoretical and practical perspectives from communication science – particularly media content production techniques and media literacy – and environmental science, the course aims to empower students to better understand the urgent challenges currently facing the environment, as well as equip them with the necessary skills for becoming proactive in approaching them. In order to achieve its aims, the course provides practical knowledge and case studies that inspire and motivate students, as well as a best-practices guide including interviews with specialists from local initiatives dealing with environmental problems. Structured in five interdisciplinary modules, with each containing a section of “knowledge” (theoretical data), “inspiration” (case studies) and “action” (practical assignments), the course stimulates personal agency in approaching environmental problems and a solutions-oriented approach, equipping students with the necessary skills for communicating effectively, persuasively and accurately on digital platforms about environmental topics. More specifically, we present a case study of using social media for teaching environmental communication, drawing on existing literature on the topic and connecting it with research on green citizenship. By using a focus group discussion and a student survey in the curriculum design phase of the project, as well as

a survey applied to graduates after the course's first year of implementation, our research provides a detailed description of how the course was created, as well as of its implementation and outcome. Developed as part of an Erasmus+ project bringing together higher education specialists in communication and environmental science from Romania, Hungary, Estonia and Lithuania, the course we describe in this in-depth case study links academic knowledge with real-world data and hands-on assignments, thus preparing students to successfully contribute to sustainability discourses developed across the different professional contexts they are part of, and become informed advocates of environmental protection while actively practicing green citizenship.

2. Green citizenship and its role in higher education

Situated at the intersection between environmentalism and citizenship theories, the concept of green citizenship combines environmental awareness, democratic participation, and the everyday practice of sustainable living. This perspective extends the liberal understanding of citizenship based on individual freedoms and rights to emphasize the individual duty to protect the environment through concrete and innovative solutions to global challenges (UNESCO, n.d.). Scholars highlight that this form of citizenship is twofold: first of all, it is practical, as manifested in daily routines related to behaviors such as recycling and waste management, using sustainable means of transportation, paying attention to resource conservation, or embracing green consumption; secondly, it is political, including environmental activism, which may involve membership in NGOs, protesting, or attending demonstrations (Stern, 2000). The political dimension of green citizenship is particularly relevant in the context of accelerating climate change and resource depletion, which require citizens to act as "critical agents of change" (UN, 2015) in line with the UN' Sustainable Development Goals.

In contemporary debates, there are various concepts closely related to green citizenship, such as "ecological", "sustainability", or "environmental citizenship" (ENEC, 2018), in the general effort of "greening" citizenship (Dean, 2001; Machin & Tan, 2024). Environmental citizenship stresses the ethical, civic, and behavioral dimensions of environmental action. It implies "the responsible pro-environmental behavior of citizens who act and participate in society as agents of change in the private and public sphere, on a local, national and global scale, through individual and collective actions, in the direction of solving contemporary environmental problems, preventing the creation of new environmental problems, achieving sustainability as well as developing a healthy relationship with nature" (ENEC, 2018). To clarify the added value of these similar terms, the following distinction can be made: while "environmental citizenship" highlights the civic duty to the environment, "sustainable citizenship" focuses on long-term planetary health, and the more general term "green citizenship" combines these perspectives, emphasizing everyday, actionable steps and broader democratic engagement (ENEC, 2018).

Increasing global environmental challenges and their consequences, such as climate change, extreme weather events, biodiversity crises, species extinctions, or the pollution of natural resources and health crises, have led to an increased importance of green citizenship. These challenges do not only require political decisions and business innovations, but also grassroots behavioral change.

Critical studies argue that the limits of neoliberalism could be dealt with the help of green citizenship, anchored in democratic norms and practices (Macgregor, 2016), aiming to overcome unsustainable development. The perspective of individuals acting as environmental stewards, assuming their ecological rights and duties, virtues and practices (Machin & Tan, 2024) makes citizens accountable for behaviors directly influencing ecosystems. On the other hand, it was argued that the ecosystems where citizens live explicitly shape the content of green citizenship, perceived as a lived practice grounded in local spatial realities (Wood & Kallio, 2019). Practices of “greening everyday life” (Meyer and Kersten, 2016), such as “attention to urban biodiversity, (...) community gardens and farmers’ markets, bicycling and automobility” (Meyer and Kersten, 2016) become manifestations of green citizenship.

UNESCO’s agenda on education for sustainable development (2025) considers that universities’ role is to teach students to make informed decisions and take action to solve problems. When it comes to environmental problems, their transversal character – meaning they are deeply interconnected with social, cultural, economic, and political issues – makes them even more challenging to solve. In this context, higher education should enable citizens to critically assess these connections and to act accordingly.

The practice of green citizenship requires a sense of agency. Research shows that individuals who perceive themselves as capable of contributing to environmental solutions are more likely to adopt sustainable behaviors and engage in collective action (Brereton, 2022). In this context, empowerment through education is particularly relevant for younger generations of future citizens (Hadjichambis & Paraskeva-Hadjichambi, 2020), who often experience climate anxiety yet may lack personal agency or opportunities to turn their concerns into action.

For youngsters, social media enables new places for action and new forms of civic engagement, from sharing environmental information to mobilizing communities. The case of Greta Thunberg, now a globally recognized environmental activist who founded Fridays for Future, a youth-led movement advocating for policies to tackle climate change, is often cited. This digital layer of participation is particularly relevant for younger generations, whose active citizenship identities are shaped by participation in such youth movements (Huttunen & Albrecht, 2021). Moreover, if one core characteristic of green citizenship practices is “critical acting” (Machin & Tan, 2024, p.11) expressed through participation in decision-making processes, then digital tools offer accessible platforms for environmental expression, activism, and community building. Digital skills can serve as “smart tools”, transforming students’ ecological knowledge into agency (Nemet-allah et al. 2026), thus narrowing the gap, documented in scientific literature,

between environmental knowledge and environmental behaviour (van de Wetering et al., 2022). Through integrating training for digital skills and environmental knowledge, our approach intends to cultivate climate and digital literate citizens, capable of meaningful actions to support sustainability.

Academic literature on environmental education presents environmental citizenship in close connection with global citizenship (Misiaszek, 2015; Moreno-Fernandez & Navarro-Diaz, 2015; Nascimento & Reis, 2025), both concepts emphasizing the importance of citizens' responsibility for sustainable development. According to UNESCO, global citizenship education "aims to empower learners to engage and assume active roles, both locally and globally, to face and resolve global challenges" (UNESCO, 2014, p.15), a vision that aligns directly with the participatory dimension of green citizenship. Universities can contribute to preparing students as "agents of change" by equipping them with the knowledge, skills, and attitudes needed to engage critically with environmental issues.

3. Teaching environmental communication through social media

Several studies from the academic literature, as well as policy and strategic reports, examine the challenges faced by environmental education. First and foremost, they identify structural obstacles, referring to the marginal integration of environmental issues within formal curricula (UNESCO, 2021). Given that environmental education is still considered rather new and peripheral curricular content in many universities, it lacks reflection on effective pedagogical teaching and evaluation approaches and on teacher training programs (Zhang et al., 2025; UNESCO, 2021). Such approaches should take into consideration the importance of cultural and motivational barriers, as students may struggle to connect abstract environmental concepts to their everyday lives or feel overwhelmed and experience anxiety due to the magnitude, urgency, and complexity of global ecological problems (Goldman et al., 2020; Jensen & Schnack, 1997). Furthermore, educators struggle both to keep up with creating a curricular content able to address relevant needs and interests, amid ever-growing ecological challenges (Hudson, 2001), and with pedagogical strategies such as "the use of information and communication technologies and social media" (UNESCO, 2014, p.10). They require new forms of environmental communication literacy (Lindenfeld et al., 2012), including social media (Talib, 2018; Portman et al., 2025). Teaching students how to critically assess environmental content online and how to produce it themselves is, therefore, central to preparing them for active ecological citizenship and "greenfluencing" in a digital society (Turşie & Baya, 2025). However, research also shows that environmental topics are frequently addressed superficially, as part of poorly designed programs that fail to develop the interdisciplinary approaches needed for sustainability-oriented thinking (Auñón, 2024).

International organizations and institutions such as UNESCO and the European Commission advocate innovative, interdisciplinary approaches using up-to-date digital

tools for environmental education, supporting the idea that environmental education must go beyond specialized courses and should be integrated transversally into the curricula. Moreover, the European Commission advocates for “green skills” (Bianchi et al., 2022) to be integrated into the learning outcomes developed in education.

Taking into account existing research on the topic, the current paper aims to answer the following research question: “How can universities integrate green citizenship into higher education curricula through a widely accessible course that leverages digital and social media tools to enhance appeal, impact, and skill development in environmental awareness, critical evaluation, and sustainable action?”.

Our research tackles this question through a case study of a transversal course implemented at the West University of Timisoara (WUT), offering several innovative perspectives on teaching environmental communication to Gen Z students. First of all, the course has an interdisciplinary approach. Keeping in mind that digital technologies increasingly mediate green citizenship and social media platforms have become key spaces where environmental narratives circulate, communities mobilize, and young people develop civic identities, we designed an original educational venue at the intersection between environmental and communication studies. Secondly, the course has an innovative pedagogical approach. It is focused on competence-based learning and combines theoretical elements from the fields of communication studies (with a particular focus on digital media literacy and media content production skills) and environmental studies, connecting theory with real-world examples and including a best-practices guide with detailed descriptions and interviews with specialists on implementing local environmental communication campaigns. This approach aligns with WUT’s student-centered teaching and learning approach (Ilie et al., 2020), i.e., the reflective-collaborative model that emphasizes the importance of designing teaching experiences that enable students to achieve authentic learning goals, connected to real-life problems. Thirdly, the course has a multidisciplinary addressability, being conceived as an elective transversal course, available to students from all university specializations and rewarded with 2 ECTS.

The proposed case study is a higher education course that promotes ecological and communication literacy, digital communication skills, and a sense of agency for learners in addressing environmental challenges. It is an attempt to make environmental education more accessible, enjoyable, and transformative for contemporary learners.

4. Methodology

The current article employs a case study methodology to explore the integration of green citizenship into higher education curricula through an innovative transversal and interdisciplinary course centered on environmental communication and sustainability. The course creation was part of an Erasmus+ project entitled “GreenCool - Let me influence your green self!” (n. 2021-1-HU01-KA220-HED-000027563), in which WUT

partnered with universities in Hungary, Estonia, and Lithuania, aiming to develop a course that encourages students to become proactive content creators of environmental messages on social media platforms. While the course was initially grounded in the Erasmus+ project and benefits from its multinational perspective in the curriculum design phase, the current study uses evidence exclusively from its implementation and outcome in Romania, at WUT, with the purpose of providing an in-depth case study. Comparative perspectives on connected topics included in the project can be found in separate studies employing multinational student cohorts (Kővári et al., 2023; Banász et al., 2026).

In the curriculum design stage, we developed both qualitative and quantitative research. We started with an initial phase of desktop research, in which we gathered up-to-date information on current trends in environmental pedagogy and on assessing Gen Z's attitudes and behaviors regarding the environment. Afterward, we organized a focus group discussion with 8 university students. The students were selected using an open call disseminated in WUT, inviting participants who comply with two criteria: demography - only students of 18-25 years old were selected; and social media interests - micro-influencers and opinion leaders were particularly welcomed. As a result, the focus group was composed by students with various fields of study (communication, journalism, psychology, digital media, political science and geography), having prior experience in extracurricular activities involving face to face or online communication and influencing (such as volunteering, publishing a student magazine, or being active members of student associations) and they were knowledgeable social media consumers and digital creators, each with relevant experience in these areas. All the participants were invited to sign an informed consent form, acknowledging the fact that their name could appear for identification purposes only in the interview transcript, but it will not be presented in the reports, that the interview was recorded for research purposes only and that the focus group interview was being processed as research work and they could request to read it before being published. The focus group discussion was facilitated by two WUT researchers, who steered the discussion through the five parts of the focus group guide, accounting for a total of 95 minutes: introduction and warm-up, communication and influencing techniques, green issues, green attitudes and conclusions. The discussions allowed a better understanding of how students' social media consumption habits (*What channels of communication do you use the most in your activities? / What type of techniques do you use to impact your group/followers?*) connect with their environmental attitudes (*How do you see the transition to becoming green among youth? Do you see any (attitude) changes? Do you think there is a "dark side" of greening? Are there any debates of this type that come to your mind? Please give us examples of critical points of view on green issues.*), and how they perceive online opinion leaders who promote environmental awareness and a sustainable lifestyle, also known as "greenfluencers" (*Do you follow green influencers online? Which ones?*). The focus group also helped us calibrate a survey that we subsequently applied to primarily to assess their

perceptions and practices regarding green social media content, environmental awareness, and attitudes. The questionnaire, that took 10 minutes to complete, was applied in Timisoara (Romania) to students from universities and high-schools, aged 14-25, as part of several educational events. A computer assisted data collection (CAPI) method was carried out via the online QuestionPro platform. All survey participants were assured about the anonymity of their answers, they were informed about their right to end the completion of the questionnaire at any time and about the aggregate character of published data.

The survey's 395 responses were useful in designing the course's curriculum to meet students' expectations and needs. The data was analyzed with SPSS. The data presented in this paper resulted from frequency analysis of the responses on two sections of the questionnaire, regarding social media consumption (*How much time do you spend online using social media platforms per day?*) and green issues (*How interested are you in the following environmental topics? - Reducing food waste; Recycling; Green transport (public transport, scooter, e-car); Green festivals (e.g. returnable glass); Giving up packaging; Water saving; Energy saving; Protecting nature; Protecting the climate; Waste management (e.g. separate collection); Low waste lifestyle; Sustainable fashion; The downside of green initiatives-pollution scandals*), with answers using 1-4 Likert scales.

Consequently, the course was developed by an interdisciplinary team of experts in environmental and communication sciences who participated in the Erasmus+ project. Finally, after the course's first year of implementation, we applied a survey to a different, smaller cohort consisting of 35 students who enrolled and completed the course, to gather feedback and assess what teaching tools were most effective and how we can improve the course in the following year. The survey required 5 minutes to be completed and had two parts (Figure 3): a general one, investigating students' perception of the convergence between the course and the teaching philosophy of the university and on the appropriateness of the course's length and pace, and a part dedicated to questions regarding the learning experience. Using 1-5 Likert scales, students had to assess the relevance of the content (*Content was relevant to me*), of the teaching and learning methods (*"Action" clearly connected to the "Knowledge" and "Inspiration" parts/Tests, activities supplemented the training well/Offered opportunities for practice, collaboration, and application*), of the efficacy of learning (*Feel confident coupling green topics with communication methods*), of the Moodle platform experience (*Clearly organised in Moodle platform/Moodle platform was attractive for the learner*) and of the course's perceived utility (*The course is a much needed cross-curriculum course*). In the end, an open-ended question allowed students to make final evaluative remarks on the course.

5. Case study: A transversal course intersecting environmental and communication science

Several studies in recent years have advocated the need for teaching environmental communication using innovative approaches and connecting it with other areas of media education (Milstein et al., 2017; Brereton, 2022). Social media in particular can serve as a pedagogical tool for fostering the critical thinking tools students need in the digital world, since “environmental communications and extensive new online forms of media literacy can be harnessed at all levels of the educational spectrum, as students and educators strive to promote innovative online learning” (Brereton, 2022, p. 187).

5.1. Curriculum design & syllabus creation

The learning objectives of the course took into account recent works on environmental communication pedagogy and the need to focus on aspects such as “teaching basic [...] concepts of sustainable development”, “teaching about the planet (especially with regard to air and soil)” and “waste recycling management”, with particular attention granted to “campaigning around the environment and using interactive techniques”, as students were encouraged to become proactive creators of social media content dealing with environmental issues (Sharifi et al. 2019, quoted in Brereton, 2022, p. 187-188). Moreover, our objectives took into account the generally positive results of studies that analyze learning mediated by technological tools, referring to their use as “motivational, promoting joy and interest” among students (Viteri, 2021). In addition, we added a reflective and collaborative component in the curriculum design process – in line with WUT’s approach to teaching and learning (Ilie et al., 2020): the course involved developing content for a collaborative Instagram account, allowing students to engage with real digital platform audiences, a type of teaching process shown to “bring [the] definition of environmental communication to life” (Cruger, 2017, p. 364). Teamwork for creating digital content also encouraged students to “build from their experience with consumption of mediated messages about the environment”, while critically assessing and filtering such content in order to become “constructors of [their own] environmental messages” (Cruger, 2017, p. 364). Finally, we decided the course will also teach students storytelling techniques for developing digital content, starting from the idea that “storytelling and ‘restorying’ can play a critical role in the transformation of learners regarding environmental concerns”, because “stories not only teach us how to act – they *inspire* us to act” (Pileggi & Morgan, 2017, p. 227), as well as a section dedicated to the ethical aspects of social media communication and recognizing misinformation.

The course offered an extensive list of environmental topics students could choose from (e.g. tips for leading a sustainable lifestyle, documenting local environmental initiatives, recycling and upcycling benefits, the consequences of irresponsible consumption connected to fast fashion etc.), as well as a wide range of possible formats for presenting the data in an attractive, well-documented and meaningful way, so as to fit the expectations of social media platform audiences (e.g. tutorials, testimonials, image-

driven presentations structured as “pecha kucha” or elevator pitch speeches, interviews with local green campaign organizers / NGOs, journalistic reports from events that had a strong environmental component etc.). The overall aim of offering this wide array of choices was to encourage students to find a topic that particularly fits their interests, but also allow them to get acquainted with topics outside this sphere, thus “developing positive sensitivity for issues and discourses” connected to the environment, while proactively approaching them in the social media content they produce (Brereton, 2022, p. 188).

Throughout the curriculum design process and later while creating course materials, we kept in mind that “emotions remain a powerful source of behavior and cognition” (Brereton, 2022, p. 188) and that several studies attest Gen Z’s tendency to predominantly consume “visually and sonically pleasing content dripping with (authentic) personality” from social media over predominantly informative one from legacy media (Oliver Wyman Forum, 2023). We also took into account that the focus groups discussion and the subsequent survey we applied showed most of our students spend significant amounts of time on social media everyday (43% spend 1-3 hours, and 37,5% spend 4-6 hours), particularly on Instagram (according to over 80% of respondents), and they tend to have an interest in generic environmental issues, rather than concrete ones. The largest majority chose “nature protection” as their green interest, rather than specific topics such as “reducing food waste”, “recycling” or “green transport”.

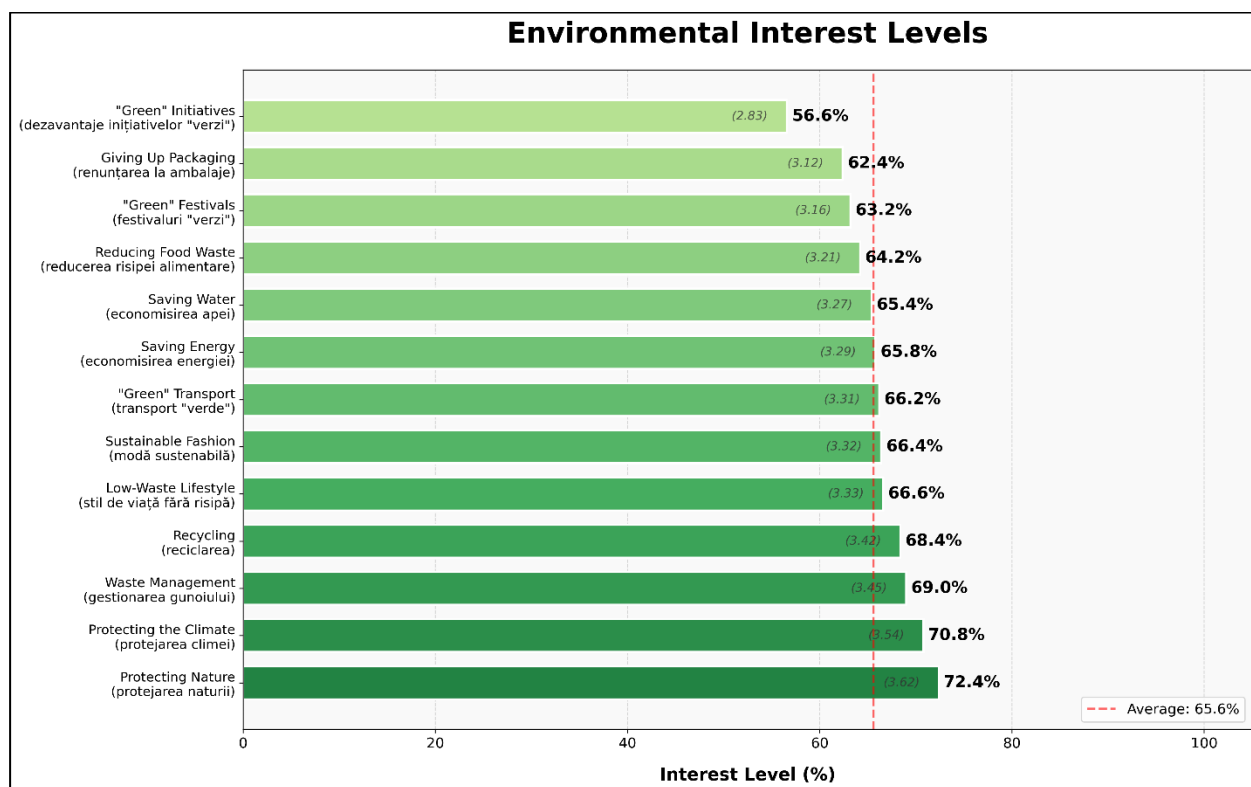


Figure 1. Excerpt from the pre-implementation survey assessing students’ interest in environmental issues (n=395).

Subsequently, we decided to include documentary films, online videos, and other powerful data visualization resources (e.g., infographics, concept maps, timelines, before-and-after visualizations, etc.) as predominant pedagogical devices to introduce students to a collection of environmental problems and highlight how they impact everyday life. Inviting students to watch and reflect on documentaries such as *The True Cost* (2015) when discussing responsible consumption in the fashion industry, or reading up-to-date analytical visualization articles posted on *Earth.org* are two examples for how we attempted to create a course that will engage Gen Z students effectively.

In order to inspire students with diverse educational backgrounds, specializing in university degrees that are not necessarily connected to studying the environment or communication, to become the “critical agents of change” described in the UN’s 2030 Agenda for Sustainable Development as having a vital role in activating the social transformations needed for dealing with current environmental problems, our course aimed to equip them with the necessary green knowledge and communication skills. Our main aims were connected to: (1) empowering students to better understand environmental topics and become proactive in approaching them, while gaining a set of communication skills to help them in the process; (2) providing case studies that inspire and motivate students, as well as a best-practice guide including interviews with local representatives of environmental communication projects; (3) stimulating personal agency in dealing with environmental problems (i.e. approaching a solutions-oriented, instead of a problem-oriented perspective); (4) making sure students are equipped with the necessary skills for communicating effectively, persuasively and accurately on social media about environmental topics, while also being less vulnerable to disinformation, thus fostering digital media literacy skills.

To achieve these aims, the course included a consistently practical component, encouraging students to create relevant content on a collaborative Instagram account. For this purpose, students were offered creative freedom in order to adopt a specific green topic and a format for communicating it (ex: data- and image-driven presentations about saving water, tutorials on how to upcycle, how-to videos about recycling, audiovisual stories about local green initiatives, documenting personal explorations of how much plastic is included in “paper” cups, covering local events / initiatives etc.).

The skills targeted by the course included: (1) environmental literacy and awareness (understanding key environmental issues, like climate change, biodiversity loss, pollution, sustainability, etc.; being able to “translate” scientific and policy information for public audiences; identifying misinformation and ensuring accuracy in environmental messages on social media); (2) social media literacy and digital content creation (platform-specific communication strategies, visual storytelling through photography, videography and infographic design, the ability to write concise and engaging texts for social media, as well as use mobile-friendly design and video-editing tools, such as Canva and CapCut); (3) other transferable skills (critical thinking and ethical communication,

balancing advocacy with factual accuracy, facilitating digital dialogues and participatory communication, working in teams, and meeting deadlines).

In order to achieve our main aims and build the targeted skills, the course was divided into 5 modules, each blending communication science and environmental topics and being structured into 3 sections: “knowledge” (theoretical data), “inspiration” (case studies), and “action” (applied tasks). A summary of the main topics addressed, with each of the 5 modules connecting communication science and environmental topics, is shown in Figure 2.

Module number	Communication Science Topics	Environmental Topics
1.	Understanding creative and circular communication.	Soil biodiversity.
2.	Crafting an online green story: using public speaking and debate techniques to formulate arguments for environmental protection.	Zero-waste lifestyle, bioeconomy and circular economy.
3.	Digital video crafting techniques: the filming and editing process for a social media video.	Responsible consumption, collective social responsibility.
4.	Communicating persuasively and building the ethical arguments of a green story.	Sustainable living, greenwashing.
5.	Using art to communicate effectively on environmental topics.	Renewable energy, smart mobility.

Figure 2. A summarized description of the topics approached throughout the 5 modules of the course.

Throughout the semester, students were free to choose one or more environmental topics of interest, do additional research on them following a list of recommended sources, and consequently develop a social media content format (video, image gallery, infographic) using the communication techniques presented in class. The course was designed in a blended learning format, using Moodle, the university’s e-learning platform, to post all course materials, supplementary reading and references, as well as case studies and quizzes.

5.2. Implementation and outcome of the course

The course used student-centered teaching techniques to ensure the topics are well apprehended, including panel and step-by-step discussions, brainstorming sessions, the Frisco method, Socratic dialogues, and presenting case studies. The social media content created by students was analyzed in class as part of group discussions in which the student authors presented detailed descriptions of how they researched the topic and created the content. The process included both teacher evaluation and peer evaluation based on a set of marking points addressing topics discussed in class, i.e., integrating relevant and well-verified factual data based on provided sources / other relevant ones, formulating persuasive arguments and using effective storytelling techniques for social media, applying digital video filming and editing techniques, and building persuasive and

ethical arguments. The social media content created during the class was posted on a collaborative Instagram account entitled *@student.eco.in.timisoara*.

The teacher's classroom observations showed high levels of engagement and adaptability of students in response to the course's practical and interdisciplinary approach. When environmental topics were introduced through videos, infographics or collaborative tasks, learners actively participated, asked clarifying questions, or brought their own real-world experience into discussion. Their ability to understand and reflect on sustainability narratives revealed growing communicative competence and ecological awareness. Particularly during peer evaluations, a supportive learning climate was encouraged within the student group. Overall, students responded positively to the course's interactive, practically oriented format, showing curiosity, initiative, and a willingness to experiment with both the content and the form of green social media messages. Particular attention during class discussions was granted to exploring the opportunities and limits of using AI for digital content creation, highlighting how this practice, in some cases, can undermine students' ability to think critically and creatively. A tendency of some students to rely excessively on AI for media content creation was also noted during the teacher's classroom observation.

In the evaluation survey applied after the first year of implementation, the largest majority of the student group agreed or strongly agreed that the course was well organized and easy to follow (63% strongly agree), had an appropriate length and pace and generally met their expectations. Moreover, 46% of students strongly agreed that they feel confident coupling green topics with communication methods.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
General questions					
3. Corresponded to the training philosophy of my University	60	34	6	0	0
4. Well-organized and easy to follow	63	37	0	0	0
5. Appropriate length (to content)	60	37	3	0	0
6. Appropriate pace	54	40	6	0	0
7. Met my expectations	46	46	8	0	0
Questions on learning experience					
9. Content was relevant to me.	49	40	11	0	0
10. Covered the topics effectively	63	37	0	0	0
11. Knowledge to Inspiration to Action was effective (learning style)	54	37	9	0	0
12. Tests, activities supplemented the training well	51	46	3	0	0
13. I retained the information	57	37	0	6	0
14. Offered opportunities for practice, collaboration, and application	51	40	9	0	0
15. Feel confident coupling green topics with communication methods	46	51	3	0	0
16. Trainer(s) succeeded to engage and facilitate	51	46	3	0	0
17. Clearly organised in Moodle platform	49	46	5	0	0
18. Moodle platform was attractive for the learner	43	49	8	0	0
19. No technical issues	46	46	6	0	2
20. "Action" clearly connected to the "Knowledge" and "Inspiration" parts	49	49	2	0	0
21. The time for self-study and activities was enough.	37	51	12	0	0
22. The GreenCool course is a much needed cross-curriculum course	50	47	3	0	0

Figure 3. Post-implementation survey gathering student feedback (numbers express percentages, n=35).

In addition to the quantitative questions listed in Figure 3, the survey included an open-ended question about what students liked or disliked about the course. Their responses provided positive feedback regarding (1) the creative freedom allowed with social media content creation, (2) the interactive methods of teaching and the flexibility offered by the blended learning format, (3) the fact that the course presented up-to-date

and relevant case studies, while the information was concise, and (4) theory and practice were well-balanced. However, some students also mentioned challenging aspects of the course, including (1) understanding a large amount of information and how it connects to everyday life, (2) using the university's Moodle platform, as well as graphic design and video editing apps, such as Canva and CapCut, and (3) producing creative green content for social media.

The course's outcome can be interpreted in close connection to the green citizenship framework outlined earlier in this study. Students' active in-class participation, collaborative peer evaluation, and production of engaged social media content suggest more than simple knowledge acquisition: they indicate the development of agency, critical reflection, and the capacity to translate environmental concerns into relevant content, which aligns with the literature describing green citizenship as both a practical and political mode of civic engagement (Stern, 2000; ENEC, 2018; Machin & Tan, 2024). The fact that learners connected sustainability narratives to their own experience also supports the idea that environmental education is most effective when it helps students move from abstract ecological issues toward everyday practices and real-world problem solving (Wood & Kallio, 2019; UNESCO, 2021). The implementation results also align with the literature on environmental communication and digital literacy. Students responded positively to the interdisciplinary and practice-oriented format, which is consistent with research arguing that environmental topics become more meaningful when taught through contemporary media tools, case studies, and competence-based learning (Lindenfeld et al., 2012; UNESCO, 2014; Portman et al., 2025). However, the difficulties reported by some students, especially in managing large quantities of information, technical aspects connected to the use of digital platforms, and AI-supported content creation, point to the limitations identified in earlier studies regarding the need for stronger critical media literacy in sustainability education (Goldman et al., 2020; Hudson, 2001; Auñón, 2024).

6. Limitations of the study and directions for future research

Several limitations should be taken into consideration when interpreting the findings of the current study. Firstly, our proposed transversal and interdisciplinary course integrating green citizenship into higher education curricula aligns with WUT's reflective-collaborative and student-centered teaching and learning model (Ilie et al., 2020), thus being situated within a specific institutional culture, which may limit the broader theoretical positioning of the study. The case study presented above prioritizes the in-depth description of the course over comparing or contrasting it with other established frameworks for curricular innovation in environmental education - one aspect which should be considered when interpreting the transferability of the findings. This limitation is partly mitigated by the inclusion of expert input from four countries during the curriculum design phase, which enhances its potential for transferability.

Secondly, a limitation of this study is the sample size of the focus group, which consisted of 8 students, resulting from a local selection process, and of the post-implementation cohort of respondents. We included here an evaluation of the course after its first year of implementation, consisting of a survey applied to the 35 students who enrolled and completed the course. An additional limitation could involve the timing of applying the evaluation survey - before the examination session -, potentially favoring positive answers. A future line of research could involve more frequent and extensive course evaluations, applied at different stages of its implementation.

Thirdly, this study has limitations related to the observation of students' reliance on AI tools during content creation. Because this issue emerged mainly through classroom observation, the study does not provide systematic data on the extent or frequency of AI use. Consequently, this aspect should be seen as a preliminary concern that highlights the need for further and more systematic research using targeted methods to examine how AI affects students' critical and creative engagement.

Finally, as we were involved in both the design and implementation of the course, we acknowledge the potential bias included in the current self-evaluation and recognize it as a potential limitation of the study. The post-implementation anonymous survey was intended to partially address this concern by capturing student feedback independently of the instructor's assessment. Independent evaluation could also be part of the course's future implementation.

7. Conclusions

This paper provided a detailed description of the curriculum design process, syllabus creation, implementation and outcome of a course integrating green citizenship into higher education curricula. Starting from the pressing need for universities worldwide to equip contemporary generations of students from a broad range of specializations to deal with current environmental challenges and the societal changes needed for facing them, the course we presented here proposed an effective model for obtaining tangible results in students' environmental knowledge and personal agency, as well as their media literacy skills and capacity to produce informed and persuasive digital content. While grounded in WUT's local pedagogical model, the course's content and design were developed to support broader applicability. In particular, the course integrates relevant knowledge and case studies offered by experts from the four Erasmus+ project countries that were part of the course's initial design, each bringing its own contextual specificity. This increases the course's transferability and helps it go beyond a single institutional perspective, making it potentially adaptable to other higher education contexts interested in green citizenship education.

Using a blended learning format, interdisciplinary learning modules, and social media tools, this course not only broadens the appeal of environmental communication to students from a wide range of faculties, but also transforms passive learners into proactive creators of environmental narratives disseminated across social media. The

survey applied to students who completed the course in its first year of implementation, together with the qualitative in-class observations, suggests positive student responses in several areas related to the course objectives. These include a self-reported improvement in awareness of everyday environmental topics, a stronger ability to identify misinformation and appreciate the importance of accuracy in presenting environmental data, and a perceived development of a sense of agency in adopting sustainable lifestyles and promoting them. However, while these findings are in line with the course's aim of fostering green citizenship, they should be interpreted as tentative and exploratory rather than as evidence of measured change over time.

Results from the first-year implementation of the course are in line with research showing the generally positive impact of teaching with technological tools and encouraging students to create their own narratives to communicate environmental topics (Viteri, 2021; Brereton, 2022; Cruger, 2017), and present improved digital literacy skills as a notable outcome (Talib, 2018; Portman et al., 2025). However, several challenges were also noted, including difficulties experienced by some students with filtering large amounts of data and connecting it with everyday life; problems with operating some of the technical tools needed for the course; and relying excessively on AI for producing media content. Recommendations for addressing these challenges in the following semesters might consist of including a basic data literacy section and using local and relatable data sets for documenting environmental topics, offering technical tutorials and encouraging peer support, as well as reframing AI as a brainstorming support, not a content generator, by requiring AI conversation logs and prompts used.

AI Use Statement

The final version of this paper was proofread using Grammarly to assist with suggestions regarding grammar and style. All final edits and content decisions were made exclusively by the authors.

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