SDG-iLevel

Leveraging Individual SDG Contributions by University Staff

PR1– SDG-iLevel Maps

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Content

See the Maps in the SDG-iLevel project website: www.sdg-ilevel.eu

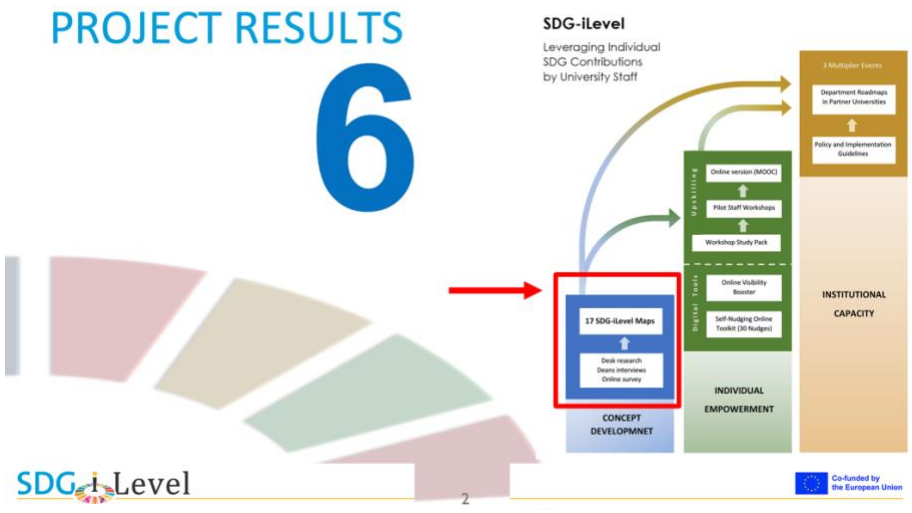
1. Introduction: the SDG-iLevel Project

SDG-iLevel (Leveraging Individual SDG contributions by University Staff) is a forward-looking Erasmus+ Strategic Partnership project funded by the European Commission. Spanning from 2022 to 2025, the project seeks to create approaches, methods and tools to uncover, harness and strengthen the individual contributions of higher education academic staff to the Sustainable Development Goals (SDGs).

The project consortium consists of the University of Girona (Spain, coordinator), the University of Rijeka (Croatia), Kaunas University of Technology (Lithuania), Accreditation Council for Entrepreneurial and Engaged Universities (ACEEU) (Germany), Senior Europa (Kveloce I+D+I) (Spain), and COPERNICUS Alliance (Germany).

The SDG-iLevel project has the ambitious goal of developing six project results, including:

(i) A reference framework to identify and analyze academic staff contributions in the field of sustainable development (SDG-iLevel Maps),
(ii) An online visibility booster to support university staff to promote their contributions on social media.
(iii) A self-nudging online toolkit to reinforce individual contributions institutionally.
(iv) A workshop study pack to train university staff in key relevant skills.
(v) Policy and implementation guidelines to support leaders with strategies and recommendations to expand individual contributions to the SDGs; and
(VI) 3 Departmental roadmaps with a program of actionable measures to recognize, promote and generate academic individual SDG contributions within a department or university unit.



The SDG-iLevel project embraced the SDGs through a whole-institutional perspective. This kind of approach requires integrating sustainability across the institution (teaching and learning, research, management (governance) and campus operations, and community engagement). This approach allows university staff and students to develop a sustainability mindset as there are consistent opportunities to live and learn sustainability on campus (European Commission, 2022).

2. The SDG-iLevel Maps

The SDG-iLevel Maps were the central result of the Conceptual and Development Phase of the SDG-iLevel project. The aim of the SDG-iLevel Maps is to identify and categorise individual contributions of university staff working in different roles and functions. The development of the Maps did demand a significant intellectual and collaborative effort from all project partners.

2.1 Why, What, and Who

Why

There is a lack of reference frameworks that link the SDGs with staff roles, functions, posts, responsibilities and tasks. Thus, identifying the key contributions that academic staff can make through their roles and responsibilities at their institutions can provide a valuable basis for advancing the implementation of the SDGs in higher education.

What

The proposed SDG-iLevel Maps provide a lens to see the linkages between the SDGs and the staff roles and responsibilities. They also contribute to increase the visibility of individual contributions and prompt thought and action to drive further SDG-oriented contributions. They do not intend to be a checklist, but rather to inspire positive actions towards sustainable development. The SDG—iLevel maps allow universities to identify, recognize, promote, and increase the visibility and celebrate individual staff contributions to the SDGs. The Maps can be used as a tool to:

- Map the individual SDG initiatives and actions taking place at the institutional level and use this information for institutional assessment and auditing.
- Communicate and increase the visibility of SDG efforts carried out by individual academic staff.
- Acknowledge and celebrate individual staff contributions to the SDGs.
- Integrate the SDGs in job descriptions.

- Support the integration of SDGs in professional learning plans and career progression frameworks.
- Assess individual performance related to the implementation of the SDGs

Who

The contributions have been identified for use by academic staff and universities. Academic staff will be able to better identify and understand how they can contribute to the sustainable development agenda. Universities will be able to connect the SDGs with staff roles and responsibilities as well as to recognize and celebrate the efforts undertaken by the university community in the implementation of the SDGs.

2.2 Methodological approach

The methodology used for the creation of the SDG-iLevel Maps included the following steps and strategies:

- A literature review, to identify scientific referent works made in the field that could help in the development of the theoretical framework for the Maps structure and contributions' analysis.
- Creation of an initial model for SDG-iLevel Maps' structure and good practices analysis.
- A survey questionnaire to gather opinions about the elements of the model for the SDG-iLevel Maps' structure, and about incentives and strategies to improve academics' contributions to the SDGs.
- Interviews to deans and heads of departments to know current strategies they have implemented, possible barriers and possibilities, as well as their knowledge about good practices related to the SDGs from university staff within their units.
- Final model.
- A systematic literature review to find specific academic individual contributions to specific SDGs.
- Selection of a sample of 100 good practices to be included in the SDG-iLevel Maps.
- Development of the 17+1 SDG-iLevel Maps.
- A catalogue of cases (highlighting some of the 100 goos practices) was added to the final list of 17+1 SDG-iLevel Maps to better understand the complexity behind the Maps, and to have more detailed information from each single case.

2.3 How to read and understand the maps

Our approach is influenced by critical realism. *The Transformational Model of Social Activity* (TMSA) (Bhaskar, 1998) is a key theoretical contribution from critical realism that makes a distinction between individuals acting (agency) and the society that enables and constrains their actions (structures). The

TMSA offers two central ideas for the conceptualization of the contributions to the SDGs: *the seven-scalar laminated system* and *the position-practice system*. The *seven scalar laminated system* is an explanation about society as a hierarchical system, in which each of us is influenced for all these seven levels and/or scales of reality (see *Table 1*). This could be related to Geels and Schot (2007) multi-level perspective.

The *position-practice system* is a point of contact or mediating system between human agency and social structures. "Position" should be understood as the post(s) or positions that a person occupies and the practices in which is engaged because of these positions. The post or position involves functions, rights, duties and tasks and certain degrees of assumption. "Practices" are the activities within the system in which individuals are involved. We tend to assign agency and intention to individuals when situational factors are fundamental drivers of events. For critical realists, leadership places a key role in enabling others' agencies. Leadership is a process whereby an individual influences, encourages and helps a group of individuals to achieve a common goal (Peter Northouse, 2019).

Table 1.

Levels and Scales	Description
Level 1. The sub-individual psychological scale.	It is concerned with the intrinsic personality of the individual. It includes the individual's nature, identity, character, and psychology, as well as the individual's motivation, aptitude, confidence, intentions, interests, desires, and concerns.
Level 2. The individual person or biographical scale.	Describes the person that is studied and their capacity to determine the impact on social events and actions. The individual agency and the position-practice system are influenced by the state of mind and body of individuals (such as being healthy or sick, being capable and skilled, having access to training and resources, and so on).
Level 3. Small group micro scale.	The micro level represents the studied group of the population, especially when individuals interact. Human interaction denotes the relationship between the individual, the group, and the collective, and can develop an emergence of group and collective agency as a result.
Level 4. The meso scale: structures and functional roles.	This level of the laminated system explores structural factors that give rise to individual and collective experiences (focusing, for example, on relations between functional roles). Structural factors include mechanisms and/or powers which may be known or unknown, constructive, or destructive, and pleasant or unpleasant.
Level 5. The macro scale: societies and territories.	This layer of reality is concerned with the functioning and operation of societies and/or their territories/regions. The understanding of societies as a whole includes knowledge about its composition, constitution and configuration, and how these elements influence individuals, groups, collectives, and structures.
Level 6. The mega scale.	It is the analysis of civilizations and their traditions, which are the result of different geo-historical trajectories.
Level 7. The planetary scale (or cosmological level).	It is the superior level, and it understands the planet as a whole (as a planetary system). Global bodies and agencies such as the United Nations have a key role in developing, implementing, and monitoring global policies.

Source: Granados-Sánchez (2023).

The application of these two ideas from critical realism to higher education institutions (HEIs) takes us to two main conclusions: HEIs structure is hierarchical, with a multi-level nature, and each member of the institution can have different posts and positions, and they can change over time. In terms of hierarchy, McDonald and Nijhof (1999) adopted the macro-meso-micro approach in Business Ethics to describe different implementations of ethical values within organizations. Mia et al (2022) have used the three-levels approach in the context of HEIs sustainability practices. *Table 2* describes the three levels of implementation through the description of differential functions and reference posts.

Table 2: Levels of implementation in HEIs

LEVEL	FUNCTION	DESCRIPTION	POST
MACRO	Strategic governance	It collects the strategies and processes implemented at the general university level. Rector and Vice-chancellors (government team) have a powerful voice in the institution, and they strongly influence the type of sustainable HEI. It also includes international, national and regional institutional collaborations.	Rectors Vice rectors
MESO	Organizational	It captures decentralized strategies, initiatives and practices of faculties and departments (and intra-departments and units). It also includes multi-agent projects.	Deans, Heads of Departments, Units & Services, Research & Community Project Leaders, Degree & Program Leader or Coordinator
MICRO	Individual	It includes personal activities and actions such as specific program and course design, single research projects, and so on.	Teachers Researchers Administrative & Technicians Individual outreach

The **second element** we considered was the higher education institutional areas or dimensions. According to the literature (GUNi, 2012; Findler et al, 2019), we identified the following four university institutional dimensions: research, teaching and learning, management and campus operations, and community engagement.

The **third element** we took into consideration was the scientific field of knowledge. Al contributions were analysed according to their contributions to Life Sciences, Sciences (STEM without Life Sciences), Social Sciences and Humanities. We selected key concepts and themes from each good practice and then we classified them in accordance with its field of knowledge.

2.4 The Maps

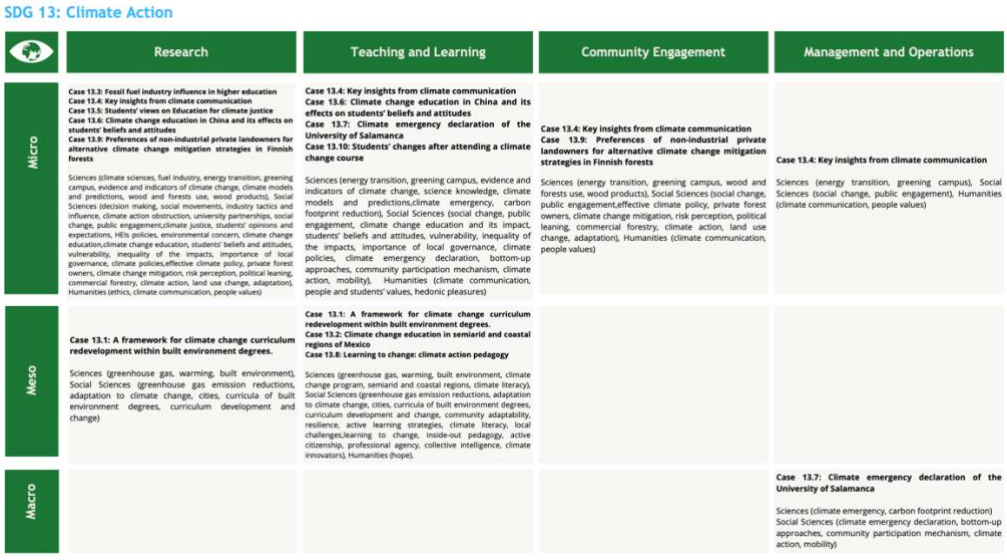
The SDG-iLevel Maps were developed following Table 3 structure. Figure 2 is an example of SDG-iLevel Map containing information from the contributions we selected. In each cell appears the title of the case and the concepts and themes related to the fields of knowledge that were covered in each SDG.

Table 3. SDG-iLevel Maps Matrix

FOUR KEY PILLARS OF HIGHER EDUCATION INSTITUTIONS

LEVELS OF IMPLEMENTATION		Teaching & Learning	Research	Community Engagement	Management & Campus
	Macro				
	Meso				
	Micro				

Figure 1. Example of an SDG-iLevel Map layout



2.5 Catalogue

Apart from the 17+1 SDG-iLevel Maps, we present a catalogue with a selection of 60 cases (or good practices) from the 100-sample used in the Maps. Each case of the catalogue contains the same elements and follows the same structure (see Figure 2).

Figure 2. Structural and analytical elements and Example of a good practice layout

STRUCTURAL & ANALYTICAL ELEMENTS	EXAMPLE OF A GOOD PRACTICE LAYOUT
- Case Number - Title - Authorship, Institution & Country - SDG (s) - Description of the practice - Main contribution - Micro-Meso-Macro relationships - Graph - Fields of knowledge - Reference - Awards - Others	

Some final considerations and limitations:

- Most of the cases contribute to more than one SDG. Our approach is to decide which SDG the case contributes to the most and consider and list all participating SDGs. The main SDG should be highlighted (it appears with a black frame).
- Many contributions consider the 17 SDG together. For this reason, an extra Map has been developed.
- Some contributions may have an impact in more than one university institutional dimensions and at different levels.

- In our case, we have differentiated between real contribution and potential contribution. In some cases, we have added arrows when a contribution in one domain has a potential impact on other domains, but there is no evidence of it.
- The university systems are diverse and there is a lack of homogeneity across countries. We have decided to focus on functions or posts (roles and responsibilities) instead of staff categories, because different terms are used in different countries and because what is important is the function an academic occupies in the system and how their contributions can influence and determine the contribution of others. On the other hand, there are no frameworks or literature that links the SDGs with specific roles and responsibilities

3. Next steps

Our plan is to continue this work initiated in the SDG-iLevel project. We would like to increase the sample of cases and analyze them to obtain results that can contribute with a better understanding of the role of the individual scale in HEIs in the achievement of Agenda 2030.

4. Sources-References

Academy for Sustainable Future Educators (EduSTA). (September 23, 2024). *Reflection on Integration of Pilots into Existing Courses – the Catalan case*. https://projects.tuni.fi/edusta/blogs/reflection-on-integration-of-pilots-into-existing-courses-the-catalan-case/

Akter, T., & Alam, B. M. (2024). Travel mode choice behavior analysis using multinomial logit models towards creating a sustainable college campus: A case study of the University of Toledo, Ohio. *Frontiers in Future Transportation, 5*, 1389614. https://doi.org/10.3389/ffutr.2024.1389614

Ajiboye, A. A., Popoola, S. I., Adewuyi, O. B., Atayero, A. A., & Adebisi, B. (2022). Data-driven optimal planning for hybrid renewable energy system management in smart campus: A case study. *Sustainable Energy Technologies and Assessments, 52*(Part B), 102189. https://doi.org/10.1016/j.seta.2022.102189

Almansa-Martínez, A., López-Gómez, S. and Castillo-Esparcia, A. (2024), "Climate change literacy and commitment in Spanish university students", *Journal of Communication Management*, Vol. 28 No. 1, pp. 147-164. https://doi.org/10.1108/JCOM-07-2022-0081

Al-Saleh, D., & Vora, N. (2023). US higher education and fossil fuels: The limits of liberalism in university climate action. *Climate and Development.* https://doi.org/10.1080/17565529.2023.2247378

Aparicio, C. E., Hinojosa, K., & Casillas, A. M. (2020). Integrating Disciplines with PBL at the Autonomous University of Nuevo Leon (UANL). *Journal of Problem Based Learning in Higher Education*, *8*(1). https://doi.org/10.5278/ojs.jpblhe.v8i1.2645

Arrondo Diez E. y Aranguren Gómez N. (2023). Evaluación de los resultados de aprendizaje de la competencia creatividad vinculada al ODS6: Agua limpia y saneamiento. Un estudio de caso en el contexto universitario. *Revista Complutense de Educación*, *34*(4), 845-855. https://doi.org/10.5209/rced.80166

Balsiger, J. (2015). Transdisciplinarity in the classroom? Simulating the co-production of sustainability knowledge. *Futures, 65*, 185–194. https://doi.org/10.1016/j.futures.2014.08.005

Bardullas, U., Félix-Anaya, C., Espejel, I., & Leyva-Figueroa, E. (2024). Climate change education in semiarid and coastal regions of Mexico: Towards an inclusive educational program. *Environmental Education Research.* https://doi.org/10.1080/13504622.2024.2403396

Bishwajit, G., Yaya, S. Uncovering the drivers of food insecurity in Cameroon: insights from a nationwide cross-sectional analysis. BMC Nutr 10, 137 (2024). https://doi.org/10.1186/s40795-024-00952-9

Blanco, M., Bares, L., & Ferasso, M. (2022). Efficiency analysis of graduate alumni insertion into the labor market as a sustainable development goal. *Sustainability, 14*(2), 842. https://doi.org/10.3390/su14020842

Blanco Portela, N., Poza Vilches, M. D. F., Junyent Pubill, M., Collazo Expósito, L. M., Solís Espallargas, C., Benayas del Álamo, J., & Gutiérrez Pérez, J. (2020). Investigación-Acción-Participativa en la formación del profesorado universitario en educación para la sostenibilidad: Academy Sustainability Latinoamérica= Action-participatory research for the university teachers training on education for sustainability:" Academy Sustainability Latin America. Profesorado: revista de currículum y formación del profesorado, 2020, vol. 24, núm. 3, p. 100-123.

Bolang, P. D., Baddianaah, I., & Osumanu, I. K. (2024). Towards meeting the food needs of urban households in sub-Saharan Africa: an analysis of formal sector employees' participation in agricultural production in urban Wa, Ghana. Cogent Social Sciences, 10(1). https://doi.org/10.1080/23311886.2024.2309711

Breen, K. C., Dotson, M. E., Madonna, M. C., Asturias, G., Peña, D. M., Springate, H., … Ramanujam, N. (2023). Community-Centered Design Thinking as a Scalable Stem Learning Intervention. *Advances in Engineering Education*, *11*(2), 2–33. https://doi.org/10.18260/3-1-1153-36042

Bui, T. T., Nguyen, D. C., Han, M., Kim, M., & Park, H. (2021). Rainwater as a source of drinking water: A resource recovery case study from Vietnam. *Journal of Water Process Engineering, 39*, 101740. https://doi.org/10.1016/j.jwpe.2020.101740

Byker, E. J., & Ezelle-Thomas, V. (2021). Preparing Teacher Candidates with Global Competencies: Taking Action on the Global Water Crisis with Service Learning. *Journal of Research in Childhood Education*, *35*(2), 268–280. https://doi.org/10.1080/02568543.2021.1880996

Cahyani, A. D., Nachrowi, N. D., Hartono, D., & Widyawati, D. (2022). Between insufficiency and efficiency: Unraveling households' electricity usage characteristics of urban and rural Indonesia. *Energy for Sustainable Development, 69*, 103–117. https://doi.org/10.1016/j.esd.2022.06.005

Caner, A., Demirel, M., & Okten, C. (2019). *Attainment and Gender Equality in Higher Education: Evidence from a Large Scale Expansion*. IZA - Institute of Labor Economics. http://www.jstor.org/stable/resrep59303

Cappelletti, G. M., Grilli, L., Russo, C., & Santoro, D. (2023). Benchmarking sustainable mobility in higher education. *Sustainability, 15*(6), 5190. https://doi.org/10.3390/su15065190

Carrillo-Nieves, D., Clarke-Crespo, E., Cervantes-Avilés, P., Cuevas-Cancino, M., & Vanoye-García, A. Y. (2024). Designing learning experiences on climate change for undergraduate students of different majors. *Frontiers in Education, 9*, 1284593. https://doi.org/10.3389/feduc.2024.1284593

Castillo Longoria, L., López-Forniés, I., Cortés Sáenz, D., & Sierra-Pérez, J. (2021). Promoting sustainable consumption in higher education institutions through integrative co-creative processes involving relevant stakeholders. Sustainable Production and Consumption, 28, 445–458. https://doi.org/10.1016/j.spc.2021.06.009

Càtedra de l'Aigua, Natura i Benestar. (July 25, 2024). *Convocat el VI Premi de Recerca Guilleries, 2024*. https://www.catedraaigua.cat/convocat-el-vi-premi-de-recerca-guilleries-2024/

Catesco. Catalonia for Education, Science and Culture Organization. (May 16, 2024). *Guía ABPxODS: Diseño de proyectos para desarrollar las competencias clave para la sostenibilidad.* https://catesco.org/es/2024/01/31/guia-abpxods-diseno-de-proyectos-para-desarrollar-las-competencias-clave-para-la-sostenibilidad/

Christie, L., Kempen, E. and Strydom, M. (2021), "Custom-made apparel manufacturing micro-enterprise owners' perspectives on sustainability: how higher education can contribute", *International Journal of Sustainability in Higher Education*, Vol. 22 No. 7, pp. 1503-1519. https://doi.org/10.1108/IJSHE-05-2020-0153

Dharmapriya, T.N., Huang, P., Dissanayaka, D.D.S. *et al.* Survey on social awareness towards energy conservation and ESD lesson on biofuel as a renewable energy source. *J Environ Stud Sci* 13, 658–667 (2023). https://doi.org/10.1007/s13412-023-00848-3

de Lázaro Torres, M. L., Borderías Uribeondo, P., & Morales Yago, F. J. (2020). Citizen and Educational Initiatives to Support Sustainable Development Goal 6: Clean Water and Sanitation for All. *Sustainability*, *12*(5), 2073. https://doi.org/10.3390/su12052073

Eid, J., Aanerud, M. & Enberg, K. Teaching sustainability at the high sea: the "One Ocean Expedition". *Sustain Sci* 19, 347–359 (2024). https://doi.org/10.1007/s11625-023-01419-9

Egitim, S. (2024). Promoting gender-inclusive leadership perceptions among Japanese university students: A nine-week critical inquiry-based action learning program. *International Journal of Educational Research Open, 7*, 100362. https://doi.org/10.1016/j.ijedro.2024.100362

Elmassri, M., Pajuelo, M. L., Alahbabi, A. A., Alali, A. M., Alzitawi, M., Hussain, H., Alnabhani, K., & Elrazaz, T. (2023). Student perceptions of pedagogical approaches to integrating the SDG 8 into business school education. *Sustainability, 15*(19), 14084. https://doi.org/10.3390/su151914084

European Commission (2022). Input paper: A whole school approach to learning for environmental sustainability. Expert briefing paper in support of the first meeting of the EU Working Group Schools: Learning for Sustainability. January 2022. https://education.ec.europa.eu/document/input-paper-a-whole-school-approach-to-learning-for-environmental-sustainability

Färber, L., Nagabhatla, N., & Ruyssen, I. (2022). Assessment of water-migration-gender interconnections in Ethiopia. *Frontiers in Human Dynamics, 4*, 858229. https://doi.org/10.3389/fhumd.2022.858229

Fernández-Fernández, I., Sáez de Cámara, E., & Imaz, L. (2024). What is gained when university leadership reviews and recommits to equality considering the 2030 Agenda for sustainable development. *Feminismo/s*, 43, 245-272. https://doi.org/10.14198/fem.2024.43.10

Ferreira-Lopes, L., Van Rompay-Bartels, I., Bezanilla, M. J., & Elexpuru-Albizuri, I. (2022). Integrating SDG 12 into business studies through intercultural virtual collaboration. *Sustainability, 14*(15), 9024. https://doi.org/10.3390/su14159024

Fia, M., Ghasemzadesh, K., & Paletta, A. (2022) How higher education institutions walk their talk on the 2030 Agenda: a systematic literature review, Higher Education Policy, Springer. DOI: https://doi.org/10.1057/s41307-022-00277-x

Fonseca, J., Wendling Junior, J., Eugenio, G. & Milagre, C. (2024). University and local recyclable material cooperative – building bridges around e-waste. *Chemistry Teacher International*, *6*(2), 135-141. https://doi.org/10.1515/cti-2023-0048

Geels, F. W., & Schot, J. (2007). Typology of sociotechnical transition pathways. Research Policy, 36(3), 399–417. https://doi.org/10.1016/j.respol.2007.01.003.

Gesti, J. (2023). *Flora de les Guilleries orientals. Catàleg, caracterització i espècies singulars*. Càtedra de l'Aigua, Natura i Benestar - Eumo. ISBN: 978-84-9766-811-8

Gómez-Llanos, E., & Durán-Barroso, P. (2020). Learning Design Decisions in Massive Open Online Courses (MOOC) Applied to Higher Education in Civil-Engineering Topics. *Sustainability*, *12*(20), 8430. https://doi.org/10.3390/su12208430

Gonzalez, E. G., & Fontana, R. J. (2023). Hoja de ruta para integrar los ODS y las competencias para la sostenibilidad en la Universidad de Cádiz. In Guía práctica de ambientalización curricular. Los ODS como oportunidad en la educación superior (pp. 167-183). Octaedro. https://octaedro.com/wp-content/uploads/2023/11/9788419506320.pdf

Granados-Sánchez, J. (2023) Sustainable Global Citizenship. A realist critical approach, Social Sciences, 12:171, https://doi.org/10.3390/sosci12030171

Guerrero, A; Gómez-Quintero, JD (2021). Assessing knowledge and engagement on sustainable development goals: exploratory research in the agri-food departments of Ibero-American universities. *Spanish Journal of Agricultural Research*, 19(3), 1-13 (e0303) https://doi.org/10.5424/sjar/2021193-17931

GUNi (2012) Higher Education in the Worls 4: Sustainability in Higher Education, From understanding to action, London: Palgrave MacMillan

Haw-Hamburg: IUSDRP. (February 13, 2025). Inter-University Sustainable Development Research Programme. https://www.haw-hamburg.de/en/ftz-nk/programmes-and-networks/iusdrp/

Henok Fasil Telila & Elsa Abebe Sima (2024) Quantifying food insecurity in Ethiopia: Prevalence, drivers, and policy implications, Cogent Social Sciences, 10:1, 10.1080/23311886.2024.2318862

Hiltner, S., Eaton, E., Healy, N., Scerri, A., Stephens, J. C., & Supran, G. (2024). Fossil fuel industry influence in higher education: A review and a research agenda. *Wiley Interdisciplinary Reviews: Climate Change.* https://doi.org/10.1002/wcc.904

Holzmann, V. (2021). Sustainable Smart Cities Challenges in Project Management Curriculum. *Journal of Higher Education Theory and Practice*, *21*(7), 34–43. https://doi.org/10.33423/jhetp.v21i7.4484

Hurlimann, A., Iftikhar, N., & Liu, J. (2024). A framework for climate change curriculum redevelopment within built environment professional degrees. *Environmental Education Research.* https://doi.org/10.1080/13504622.2024.2403403

Jones, R., Wham, C., & Burlingame, B. (2019). New Zealand's food system is unsustainable: A survey of the divergent attitudes of agriculture, environment, and health sector professionals towards eating guidelines. *Frontiers in Nutrition, 6*, 99. https://doi.org/10.3389/fnut.2019.00099

Kemechian, T., Sigahi, T. F. A. C., Martins, V. W. B., Rampasso, I. S., Moraes, G. H. S. M., Serafim, M. P., Leal Filho, W., & Anholon, R. (2023). Towards the SDGs for gender equality and decent work: Investigating major challenges faced by Brazilian women in STEM careers with international experience. *Discover Sustainability, 4*(11). https://doi.org/10.1007/s43621-023-00125-x

Khalaim, O., & Budziszewska, M. (2024). "It should not only be technical education." Students' climate anxiety experiences and expectations toward university education in three European universities. *The Journal of Environmental Education, 55*(4), 308–323. https://doi.org/10.1080/00958964.2024.2339824

Khorasgani, F.G., Tavakoli, M. Climate change awareness and themes of support to decarbonize the economy among students in Iran. *J Environ Stud Sci* 14, 372–383 (2024). https://doi.org/10.1007/s13412-024-00892-7

Khoo, S.-M., et. al. (2024). Connecting the challenges of quality and equality in higher education using the collective intelligence approach: Findings from an international expert panel. *Quality in Higher Education*. Advance online publication. https://doi.org/10.1080/13538322.2024.2357866

Kiwfo, K., Yeerum, C., Issarangkura Na Ayutthaya, P., Kesonkan, K., Suteerapataranon, S., Panitsupakamol, P., Chinwong, D., Paengnakorn, P., Chinwong, S., Kotchabhakdi, N., Saenjum, C., Vongboot, M., & Grudpan, K. (2021). Sustainable Education with Local-Wisdom Based Natural Reagent for Green Chemical Analysis with a Smart Device: Experiences in Thailand. *Sustainability*, *13*(20), 11147. https://doi.org/10.3390/su132011147

Leimbach, T., & Milstein, T. (2022). Learning to change: Climate action pedagogy. *Australian Journal of Adult Learning, 62*(3). http://hdl.handle.net/1959.4/unsworks_84848

Lin, C.-C., Ting, K.-H., Jhan, H.-T., Liu, C.-L., Chen, L.-S., & Liu, W.-H. (2023). University-driven coastal partnerships to address ghost gear pollution: A case study in Penghu Islands of Taiwan. *Marine Policy, 155*, 105732. https://doi.org/10.1016/j.marpol.2023.105732

Lin, C.-I., & Li, Y.-Y. (2018). Protecting Life on Land and Below Water: Using Storytelling to Promote Undergraduate Students' Attitudes toward Animals. *Sustainability*, *10*(7), 2479. https://doi.org/10.3390/su10072479

Loess. Literacy Boost Through an Operational Educational Ecosystem of Societal Actors in Soil Health. (July 31, 2024). *Case Study: HeartLand*. https://loess-project.eu/case-studie/heartland/

Mahaffy, P. G., et. al. (2024). Climate action can "flip the switch": Resourcing climate empowerment in chemistry education. *Journal of Chemical Education, 101*(9), 3856–3868. https://doi.org/10.1021/acs.jchemed.4c00548

Martínez-Acosta, M., Vázquez-Villegas, P., Mejía-Manzano, L. A., Soto-Inzunza, G. V., Ruiz-Aguilar, K. M., Kuhn Cuellar, L., Caratozzolo, P., & Membrillo-Hernández, J. (2023). The implementation of SDG12 in and from higher education institutions: Universities as laboratories for generating sustainable cities. *Frontiers in Sustainable Cities, 5*, 1158464. https://doi.org/10.3389/frsc.2023.1158464

Maruna, M. (2019). Toward the integration of SDGs in higher planning education: Insights from the Integrated Urbanism Study Program in Belgrade. *Sustainability, 11*(16), 4519. https://doi.org/10.3390/su11164519

Mbagwu, F. C., Lyaka, M., Kiwelu, J. E., Nyantakyi-Baah, L., & Holmner, M. (2020). Achieving sustainable development goals two and three: Role of academic libraries. *Library Philosophy and Practice (e-journal)*, *2020*(3995). https://digitalcommons.unl.edu/libphilprac/3995

McCormack, J., Noble, C., Rutherford, S. et al. Integrating the sustainable development goals into health professions' curricula: using the nominal group technique to guide their contextualisation. BMC Med Educ 24, 972 (2024). https://doi.org/10.1186/s12909-024-05968-0

McDonald, G., & Nijhof, A. (1999). Beyond Codes of Ethics: An integrated framework for stimulating morally responsible behaviour in organisations. *Leadership & Organization Development Journal*, 20(3), 133–147.

Mejía-Cáceres, M. A., Rieckmann, M., & Folena Araújo, M. L. (2023). Political discourses as a resource for climate change education: Promoting critical thinking by closing the gap between science education and political education. *Sustainability, 15*, 6672. https://doi.org/10.3390/su15086672

Mella San Martín, C., & Moya Díaz, E. (2024). Expansión de la educación superior en Chile: ¿La política de créditos estudiantiles ha logrado reducir la desigualdad de acceso? *Perfiles Educativos, XLVI*(184). https://doi.org/10.22201/iisue.24486167e.2024.184.61245

Mokos, M., Cheimonopoulou, M. T., Koulouri, P., Previati, M., Realdon, G., Santoro, F., Mogias, A., Boubonari, T., Gazo, M., Satta, A., Ioakeimidis, C., Tojeiro, A., Chicote, C. A., Papathanassiou, M., & Kevrekidis, T. (2020). Mediterranean Sea literacy: When ocean literacy becomes region-specific. *Mediterranean Marine Science, 21*(3), 592–598. https://doi.org/10.12681/mms.23400

Monteiro, N. B. R., da Silva, E. A., & Neto, J. M. M. (2019). Sustainable development goals in mining. Journal of Cleaner Production, 228, 509-520. https://doi.org/10.1016/j.jclepro.2019.04.332

Moyo, I. and Cele, H.M.S. (2021), "Protected areas and environmental conservation in KwaZulu-Natal, South Africa: on HEIs, livelihoods and sustainable development", International Journal of Sustainability in Higher Education, Vol. 22 No. 7, pp. 1536-1551. https://doi.org/10.1108/IJSHE-05-2020-0157

Moro, C., Phelps, C. and McLean, M. (20023) Don't forget the veggies! Identifying and addressing a lack of vegetable education in physiology, Advances in physiology Education 47, 726-731. https://doi.org/10.1152/advan.00052.2023

Munguia, N., Romero, A., Anaya-Eredias, C., Perkins, K.M. and Velazquez, L. (2023), "Global warming in the minds of Mexican higher education students: an exploratory study", *International Journal of Sustainability in Higher Education*, Vol. 24 No. 2, pp. 317-338. https://doi.org/10.1108/IJSHE-09-2021-0365

Mzinyane, B., Ajodhia, S., Gumbi, S. N., Khumalo, G., Nduli, S. B., Mfishi, Z., Lipholo, B., & Funeka, N. (2024). An autoethnography of disaster response work with low-income communities in KZN: Implications for Afrocentric social work. *Journal of Social Development in Africa, 39*(2). https://doi.org/10.4314/jsda.v39i2.4

Naidu-Young, S., May, A., Pope, S., & Gérard, S. (2024). The experiences of women leaders in the higher education sport sector: Examining the gendered organization through Bourdieu's model of field, capital and habitus. *Sociology of Sport Journal, 41*(3), 255–266. https://doi.org/10.1123/ssj.2023-0094

Niero, M. (2023). Implementation of the European Union's packaging and packaging waste regulation: A decision support framework combining quantitative environmental sustainability assessment methods and socio-technical approaches. *Cleaner Waste Systems, 6*, 100112. https://doi.org/10.1016/j.clwas.2023.100112

Null, D.C. and Asirvatham, J. (2023), "College students are pro-environment but lack sustainability knowledge: a study at a mid-size Midwestern US university", *International Journal of Sustainability in Higher Education*, Vol. 24 No. 3, pp. 660-677. https://doi.org/10.1108/IJSHE-02-2022-0046

Pailman, W., & de Groot, J. (2022). Rethinking education for SDG 7: A framework for embedding gender and critical skills in energy access masters programmes in Africa. *Energy Research & Social Science, 90*, 102615. https://doi.org/10.1016/j.erss.2022.102615

Peña, M., de les Valls, E.M. Inclusion of the gender equality sustainable development goal in engineering teaching and research. *Environ Dev Sustain* 26, 25007–25025 (2024). https://doi.org/10.1007/s10668-023-03667-2

Petzel, Z.W., Farrell, L., McCormack, T. *et al.* A collective action approach to improving attitudes and self-efficacy towards gender equality among male STEM academics. *Eur J Psychol Educ* 39, 3161–3184 (2024). https://doi.org/10.1007/s10212-024-00844-3

Rebelatto, B.G., Lange Salvia, A., Reginatto, G., Daneli, R.C. and Brandli, L.L. (2019), "Energy efficiency actions at a Brazilian university and their contribution to sustainable development Goal 7", *International Journal of Sustainability in Higher Education*, Vol. 20 No. 5, pp. 842-855. https://doi.org/10.1108/IJSHE-01-2019-0023

Rebelatto, B.G., Salvia, A.L., Reginatto, G. *et al.* Energy efficiency initiatives and the academic community's behaviour: a Brazilian experience. *Discov Sustain* 3, 33 (2022). https://doi.org/10.1007/s43621-022-00101-x

Reyes-Carrasco, P.M., Ferrari, E., Ruíz Méndez, C. and Barrón Ruíz, A. (2023), "Bottom-up approach: the participation of Fridays For Future in the climate emergency declaration in the University of Salamanca", *International Journal of Sustainability in Higher Education*, Vol. 24 No. 4, pp. 948-968. https://doi.org/10.1108/IJSHE-09-2021-0380

Rolleston, C., Nyerere, J., Brandli, L., Lagi, R., & McCowan, T. (2023). Aiming higher? Implications for higher education of students' views on education for climate justice. *Sustainability, 15*, 14473. https://doi.org/10.3390/su151914473

Ruda González, A., & Lladó Martínez, A. (Coords.). (2024). *Los objetivos del desarrollo sostenible (ODS) en la docencia, la investigación y el mundo profesional* (1ª ed.). Colex. https://www.dykinson.com/libros/sostenibilidad-en-el-derecho/9788411943215/

Saarni, S. I., et. al. (2022). The Finnish therapy navigator – Digital support system for introducing stepped care in Finland. *Psychiatria Fennica, 53*, 120–137. https://helda.helsinki.fi/server/api/core/bitstreams/c19862fa-e647-4506-9dab-f28a657e7634/content

Salmi, J., & Bassett, R. M. (2014). The equity imperative in tertiary education: Promoting fairness & efficiency. *International Review of Education, 60*(3), 361-377. https://doi.org/10.1007/s11159-013-9391-z

Shabbir, M. S. (2023). Exploring the relationship between sustainable entrepreneurship and the United Nations sustainable development goals: A comprehensive literature review. *Sustainable Development, 31*(6), 3070–3085. https://doi.org/10.1002/sd.2570

Shahriar, M. S., Hassan, M. S., Islam, M. A., Sobhani, F. A., & Islam, M. T. (2024). Entrepreneurial intention among university students of a developing economy: The mediating role of access to finance and entrepreneurship program. *Cogent Business & Management, 11*(1), 2322021. https://doi.org/10.1080/23311975.2024.2322021

Sibanda, A., & Manik, S. (2022). Reflecting on climate change education (CCE) initiatives for mitigation and adaptation in South Africa. *Environmental Education Research.* https://doi.org/10.1080/13504622.2022.2140781

Sippel, M. (2023), "Key insights from climate communication – and how they can inspire sustainability in higher education", *International Journal of Sustainability in Higher Education*, Vol. 24 No. 7, pp. 1594-1609. https://doi.org/10.1108/IJSHE-07-2022-0208

Staniewska, A.; Sykta, I.; Ozimek, A.; Barnas, K.; Dudek, M.; Marasik, M.; Racon-Leja, K. Framework for the Design of a Small Transport Hub as an Interdisciplinary Challenge to Implement Sustainable Solutions. Sustainability 2023, 15, 10975. https://doi.org/10.3390/su151410975

Tang, K.H.D. (2023), "Climate change education in China: a pioneering case of its implementation in tertiary education and its effects on students' beliefs and attitudes", *International Journal of Sustainability in Higher Education*, Vol. 24 No. 5, pp. 1058-1081. https://doi.org/10.1108/IJSHE-05-2022-0151

Taylor, H., & Williamson, S. (2024). Co-Design to Evaluate the Impact of Gender Equality Initiatives: Lessons for Practitioners, Evaluators and Researchers. *The Qualitative Report*, *29*(7), 2067-2088. https://doi.org/10.46743/2160-3715/2024.6779

Tolppanen, S., Kang, J., & Riuttanen, L. (2022). Changes in students' knowledge, values, worldview, and willingness to take mitigative climate action after attending a course on holistic climate change education. *Journal of Cleaner Production, 373*, 133865. https://doi.org/10.1016/j.jclepro.2022.133865

Tsverukayi, B. H., & Poshai, L. (2024). Commodification of Zimbabwe's higher education amid funding decline: Impact on universal access. *Transformation in Higher Education, 9*(0), a399. https://doi.org/10.4102/the.v9i0.399

Ullah, K., Majeed, M.T. District-level multidimensional poverty and human development in the case of Pakistan: does institutional quality matter?. GeoJournal 88, 561–581 (2023). https://doi.org/10.1007/s10708-022-10600-z

Universitat de Girona. (February 14, 2017). *Compromís Social. Unitat de Compromís Social i Orientació Professional (UCSOP).* https://www.udg.edu/ca/compromis-social/

Universitat de Girona. (March 29, 2024). *Cursos. Introducció a l'Agenda de Desenvolupament Sostenible*. https://www.udg.edu/ca/compromis-social/arees/escola-de-competencies/cursos-de-compromis-social

Universitat de València. (February 2025). Cátedra de Economía del Bien Común. https://www.uv.es/catedra-economia-bien-comun/es/catedra-economia-del-bien-comun.html

University College Cork. (October 31, 2024) *Teaching and Learning for Sustainability*. https://www.ucc.ie/en/sdg-toolkit/

Vehola, A., Malkamäki, A., Kosenius, A.-K., Hurmekoski, E., & Toppinen, A. (2022). Risk perception and political leaning explain the preferences of non-industrial private landowners for alternative climate change mitigation strategies in Finnish forests. *Environmental Science & Policy, 137*, 228–238. https://doi.org/10.1016/j.envsci.2022.09.003

Walentowski, H., Kietz, B., Horsch, J., Linkugel, T., & Viöl, W. (2020). Development of an interdisciplinary Master of Forestry program focused on forest management in a changing climate. *Forests, 11*(6), 632. https://doi.org/10.3390/f11060632

Wong, S., & Rojas-Mora, J. (2021). La relación entre la patente y el desarrollo: Una mirada desde la I+D universitaria chilena [The relationship between the patent and development: A view from Chilean academic R&D]. *Revista Chilena de Derecho y Tecnología, 10*(2), 229–250. https://doi.org/10.5354/0719-2584.2021.58780

Žalėnienė, I., & Pereira, P. (2021). Higher education for sustainability: A global perspective. *Geography and Sustainability, 2*, 99–106 https://doi.org/10.1016/j.geosus.2021.05.001

5. Appendix

5.1 17+1 SDG-iLevel Maps

5.2 Cases Catalogue

17+1 SDG-ILEVEL MAPS

SDG 1. NO POVERTY
SDG 2. ZERO HUNGER
SDG 3. GOOD HEALTH AND WELLBEING
SDG 4. QUALITY EDUCATION
SDG 5. GENDER EQUALITY
SDG 6. CLEAN WATER AND SANITATION
SDG 7. AFFORDABLE AND CLEAN ENERGY
SDG 8. ECONOMIC GROWTH
SDG 9. INDUSTRY, INNOVATION AND INFRASTRUCTURE
SDG 10. REDUCED INEQUALITIES
SDG 11. SUSTAINABLE CITIES AND COMMUNITIES
SDG 12. RESPONSIBLE CONSUMPTION AND PRODUCTION
SDG 13. CLIMATE ACTION
SDG 14. LIFE BELOW WATER
SDG 15. LIFE ON LAND
SDG 16. PEACE, JUSTICE AND STRONG INSTITUTIONS
SDG 17. PARTNERSHIPS FOR THE GOALS

SDG 1: No Poverty

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 1.1: Economic Modeling of Poverty** **Case 1.3: Support of Indigenous Communities in South Africa** Humanities (preservation of indigenous knowledge and cultural heritage), Life Sciences (sustainable resource management and environmental conservation), and Social Sciences (capacity-building, economics, public policy and socio-economic community development).		**Case 1.3: Support of Indigenous Communities in South Africa** Humanities (preservation of indigenous knowledge and cultural heritage), Life Sciences (sustainable resource management and environmental conservation), and Social Sciences (capacity-building and socio-economic community development).	
Meso	**Case 1.2: Inter-University Sustainable Development Research Program** Life Sciences (sustainable development and poverty alleviation) and Social Sciences (policy, governance, and education).	**Case 1.2: Inter-University Sustainable Development Research Program** Life Sciences (sustainable development and poverty alleviation) and Social Sciences (policy, governance, and education).	**Case 1.2: Indigenous Knowledge, sustainable food practices and empowerment of women in Australia.** **Case 1.3: Support of Indigenous Communities in South Africa** Humanities (preservation of indigenous knowledge and cultural heritage), Life Sciences (nutrition, agriculture, sustainable farming practices, sustainable resource management and environmental conservation), and Social Sciences (capacity-building, community development, economic empowerment, and socio-economic community development).	**Case 1.2: Inter-University Sustainable Development Research Program** Life Sciences (sustainable development and poverty alleviation) and Social Sciences (policy, governance, and education).
Macro			**Case 1.3: Support of Indigenous Communities in South Africa** Humanities (preservation of indigenous knowledge and cultural heritage), Life Sciences (sustainable resource management and environmental conservation), and Social Sciences (capacity-building and socio-economic community development).	

SDG 2: Zero Hunger

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 2.1: Research on Sociodemographic Drivers of Food Insecurity** **Case 2.3: Addressing Food Insecurity in Ethiopia** **Case 2.4: Sustainable Practices on Urban Agriculture for Food Security in Ghana** **Case 2.5: Vegetables in Nutrition Education in Physiology Courses** **Case 2.6: Sustainability Knowledge in the Agri-Food Departments of Ibero-American Universities** **Case 2.7: African Academic Libraries Achieving SDGs 2 and 3** Life Sciences (agriculture, cultivation, food security, environmental sustainability, animal welfare, farming, nutrition, physiology, and health), and Science (sustainability and environmental impacts), and Social Sciences (socio-demographic analysis, socio-economic factors, food insecurity, gener inequality, improving livelihoods, community engagement, education, public health, physiology, and policy recommendations and adaptation).	**Case 2.2: Indigenous Knowledge, Sustainable Food Practices and Women Empowerment in Australia** **Case 2.5: Embedding Vegetables in Nutrition Education in Physiology Courses** Life Sciences (nutrition, agriculture, sustainable farming practices, health education, public health, and physiology), Social Sciences (community development, economic empowerment, health education and public health), and Science (sustainability and environmental impacts).		
Meso		**Case 2.5: Embedding Vegetables in Nutrition Education in Physiology Courses** Life Sciences (nutrition, health and physiology), Social Sciences (health education and public health), and Science (sustainability and environmental mpacts).	**Case 2.2: Indigenous Knowledge, Sustainable Food Practices and Women Empowerment in Australia** Life Sciences (nutrition, agriculture, and sustainable farming practices) and Social Sciences (community development and economic empowerment).	
Macro				

SDG 3: Good Health and Well-being

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro				
Meso	**Case 3.1: Mobile Application for Huntington Disease Early Detection** **Case 3.2: Finnish Therapy Navigator** Life Sciences (psychological treatments, patient care, patient health diagnosis) and Social Sciences (mental health care, social well-being, healthcare system reforms).		**Case 3.1: Mobile Application for Huntington Disease Early Detection** **Case 3.2: Finnish Therapy Navigator** Life Sciences (psychological treatments, patient care, patient health diagnosis) and Social Sciences (mental health care, social well-being, healthcare system reforms).	
Macro			**Case 3.2: Finnish Therapy Navigator** Life Sciences (psychological treatments and patient care), Social Sciences (mental health care, social well-being, and healthcare system reforms).	

SDG 4: Quality Education

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 4.4: AcSuLA Programme for University Teacher Training on Sustainability** Social Sciences (curricula and education for sustainability).	**Case 4.1: Micro-Credentials and Sustainable Education Competences** **Case 4.2: Transdisciplinarity and the Sustainable Development Indicator Exercise (SDIE)** **Case 4.4: AcSuLA Programme for University Teacher Training on Sustainability** Sciences (Systems Thinking Promoter) and Social Sciences (curricula, education for sustainability, sustainability indicators, policy making, transdisciplinarity, education, conscious change agent, and decision-making processes).		**Case 4.4: AcSuLA Programme for University Teacher Training on Sustainability** Social Sciences (curricula and education for sustainability).
Meso	**Case 4.1: Micro-Credentials and Sustainable Education Competences** Sciences (Systems Thinking Promoter) and Social Sciences (education, conscious change agent).	**Case 4.4: AcSuLA Programme for University Teacher Training on Sustainability** Social Sciences (curricula and education for sustainability).		**Case 4.4: AcSuLA Programme for University Teacher Training on Sustainability** Social Sciences (curricula and education for sustainability).
Macro				

SDG 5: Gender Equality

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 5.1: Leadership and Gender Equality at the University of the Basque Country (EHU)** **Case 5.2: Gender-inclusive Leadership Perceptions among Japanese University Students** **Case 5.3: Gender Equality in Engineering Teaching and Research** **Case 5.4: Gender Equality in Turkish Higher Education** **Case 5.5: Experiences of Women Leaders in the HE Sport Sector** **Case 5.6: Attitudes and Self-Efficacy for Gender Equality among Male Stem Academics** **Case 5.7: Evaluation of the Impact of Gender Equality Initiatives** Sciences (gender in engineering, STEM academics attitudes) and Social Sciences (gender in sports, gender equality, evaluation, leadership, gender violence, higher education and women leadership).	**Case 5.1: Leadership and Gender Equality at the University of the Basque Country (EHU)** **Case 5.2: Gender-inclusive Leadership Perceptions among Japanese University Students** **Case 5.3: Including Gender Equality in Engineering Teaching and Research** Sciences (gender in engineering) and Social Sciences (gender equality, leadership, gender violence, gender education, and women leadership).	**Case 5.1: Leadership and Gender Equality at the University of the Basque Country (EHU)** Social Sciences (gender equality, gender violence, and women leadership).	
Meso				**Case 5.1: Leadership and Gender Equality at the University of the Basque Country (EHU)** Social Sciences (gender equality, gender violence, and women leadership).
Macro	**Case 5.3: Including Gender Equality in Engineering Teaching and Research** Sciences (gender in engineering) and Social Sciences (gender equality and gender education).			**Case 5.1: Leadership and Gender Equality at the University of the Basque Country (EHU)** **Case 5.7: Evaluation of the Impact of Gender Equality Initiatives** Social Sciences (evaluation, gender equality, gender violence, and women leadership).

SDG 6: Clean Water and Sanitation

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 6.1: Assessment of Learning Outcomes of Economics Students** **Case 6.3: Assessment of Water-Migration-Gender Interconnections in Ethiopia** **Case 6.4: Thai Wisdom for Green Chemical Analysis** **Case 6.6: Teacher Candidates Addressing Global Water Crisis through Service-Learning** **Case 6.8: Popolation's Perceptions of Water Use and Its Involvement in Water Conservation Efforts** Sciences (water management, water scarcity, water sanitation, water pollution, natural reagents, green chemical analysis, and water stress), Social Sciences (service-learning, global citizenship, learning toolkits, local wisdom, migration and gender equality, creativity competence, and social use of water).	**Case 6.1: Assessment of Learning Outcomes of Economics Students** **Case 6.2: Community-Centered Design Thinking as a Scalable STEM Learning Intervention** **Case 6.4: Thai Wisdom for Green Chemical Analysis** **Case 6.6: Teacher Candidates Addressing Global Water Crisis through Service-Learning** **Case 6.7: MOOC on Urban Wastewater Treatment for Civil-Engineers** Sciences (water cycle management, urban wastewater treatment, water scarcity, water sanitation, water pollution. natural reagents, green chemical analysis, and treatment) and Social Sciences (service-learning, global citizenship, creativity competence, social use of water, problem-based learning, learning toolkits, local wisdom, design thinking, and gender self-efficacy)	**Case 6.2: Community-Centered Design Thinking as a Scalable STEM Learning Intervention** Sciences (water pollution and treatment) and Social Sciences (problem-based learning, design thinking, and gender self-efficacy).	
Meso	**Case 6.2: Community-Centered Design Thinking as a Scalable STEM Learning Intervention** Sciences (water pollution and treatment) and Social Sciences (problem-based learning, design thinking, and gender self-efficacy).	**Case 6.2: Community-Centered Design Thinking as a Scalable STEM Learning Intervention** Sciences (water pollution and treatment) and Social Sciences (problem-based learning, design thinking, and gender self-efficacy).	**Case 6.2: Community-Centered Design Thinking as a Scalable STEM Learning Intervention** **Case 6.4: Thai Wisdom for Green Chemical Analysis** Sciences (water pollution, natural reagents, green chemical analysis, and treatment) and Social Sciences (problem-based learning, design thinking, learning toolkits, local wisdom, and gender self-efficacy).	
Macro	**Case 6.5: Rainwater as a Source of Drinking Water in Vietnam** Sciences (rainwater use, water and sanitation, and drinking water).		**Case 6.5: Rainwater as a Source of Drinking Water in Vietnam** Sciences (rainwater use, water and sanitation, and drinking water).	**Case 6.5: Rainwater as a Source of Drinking Water in Vietnam** Sciences (rainwater use, water and sanitation, and drinking water).

SDG 7: Affordable and Clean Energy

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 7.1: Energy Efficiency Actions at a Brazilian University and Their contribution to SDG 7** **Case 7.2: Planning for Hybrid Renewable Energy System Management in a Smart Campus** **Case 7.3: Electricity Usage in Urban & Rural Indonesian Households** **Case 7.5: Academic Community Behavior towards Energy Efficiency** **Case 7.6: Social Awareness for Energy Conservation & Use of Biofuel** Sciences (renewable energy, biofuels, energy efficiency & saving, consumption, green campus, sustainable energy in HE, environmental Science, sustainability studies, renewable energy engineering, and hybrid energy systems), Social Sciences (international students' perspectives, university social responsibility, academics behavioral change, campus management, public policy in energy access, electricity insufficiency, consumption, energy price, energy justice, energy economics, sustainable energy planning, smart energy management, energy policy, and education for ESD).	**Case 7.4: Gender and Critical Skills in Energy Access Masters' in Africa** Sciences (energy education, energy access, renewable energy) and Social Sciences (gender equality, postgraduate education, gender perspective in the curriculum, social inclusion and diversity in STEM).		
Meso	**Case 7.4: Gender and Critical Skills in Energy Access Masters' in Africa** Sciences (energy education, energy access, renewable energy) and Social Sciences (gender equality, postgraduate education, gender perspective in the curriculum, social inclusion and diversity in STEM).	**Case 7.4: Gender and Critical Skills in Energy Access Masters' in Africa** Sciences (energy education, energy access, renewable energy) and Social Sciences (gender equality, postgraduate education, gender perspective in the curriculum, social inclusion and diversity in STEM).		
Macro				**Case 7.1: Energy Efficiency Actions at a Brazilian University and Their contribution to SDG 7** **Case 7.5: Initiatives and Academic Community Behavior towards Energy Efficiency** Sciences (energy efficiency, consumption, sustainable energy in Higher Education, environmental Science, sustainability studies and energy saving) and Social Sciences (energy policy, universal social responsibility, environmental education, academics behavioral change, campus sustainability management, & education for ESD).

SDG 8: Decent Work and Economic Growth

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 8.1: University-Led Approach to Economic Growth among Youth** **Case 8.2: Gender Equality and Decent Work in STEM** **Case 8.3: SDG8 in Business Education in UAE's Alpha Business School** **Case 8.4: Sustainable Entrepreneurship for Inclusive Economic Growth** **Case 8.5: Graduate Employability through a Bank of Best Practices** Humanities (ethics and career guidance), Sciences (gender equality in STEM) and Social Sciences (labor market efficiency, employability, economic development, university efficiency, entrepreneurship, sustainable business, economic and social challenges, economic growth, employment, sustainability within business education, labor laws, decent work, organizational policies, cultural models, policy advocacy, societal changes, unemployment, entrepreneurship, finance, economic development, economic sustainability, business ethics, and leadership).	**Case 8.3: SDG 8 in Business Education in UAE's Alpha Business School** Humanities (ethics) and Social Sciences (economic growth, employment, and sustainability within business education).		
Meso	**Case 8.6: Chair of Economics for the Common Good** Social Sciences (Economy for the common good, ethical companies, solidarity economy).	**Case 8.6: Chair of Economics for the Common Good** Social Sciences (Economy for the common good, ethical companies, solidarity economy).	**Case 8.6: Chair of Economics for the Common Good** Social Sciences (Economy for the common good, ethical companies, solidarity economy).	
Macro				

SDG 9: Industry, Innovation and Infrastructure

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 9.1. Between the patent and development: a view from Chilean academics** **Case 9.3: SDGs in meeting and event management curriculum** Social Sciences (patents, start-ups, knowledge transfer, university-industry-government collaboration, linear innovation model, triple helix innovation model, knowledge spillover effects, tourism industry, meetings and events, specialized education, tourism economy, industry practitioners, management education, multi-level curriculum, industry associations, professional roles and responsibilities, security) and Sciences (development of technological devices, high tech, industrial technology).			
Meso	**Case 9.2: Sustainability challenges in the Raw Materials sector** Sciences (raw materials, raw materials exploitation, resource assessment, industry, mining in challenging environments, mineral and metallurgical processes, infrastructure), Social Sciences (raw materials stakeholders, resource efficiency, design of products and services for the circular economy, transportation and logistics).			
Macro				

SDG 10: Reduced Inequalities

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 10.3: A framework for equal access, success and outcomes** **Case 10.4: Neoliberalism and universal access Higher Education** **Case 10.5: Student credit policies to access Higher Education** Humanities (historical contexts, understanding and inclusion) and Social Sciences (minorities, equity of access, gender parity, disabilities, equality of opportunities, social justice, education policy, fairness in higher education, social impact of student credit systems, equitable and inclusive education, inequality, social impacts of neoliberalism, neoliberal approach, social justice, access to education for all, and student loans).	**Case 10.1: Disaster Response Work with Low-Income Communities** Humanities (cultural sensivity, indigenous knowledge, autoethnography, afrocentric theory, and Ubuntu principles) and Social Sciences (community engagement, mental health, poverty alleviation, and disaster resilience).	**Case 10.1: Disaster Response Work with Low-Income Communities** Humanities (cultural sensivity, indigenous knowledge, autoethnography, afrocentric theory, and Ubuntu principles) and Social Sciences (community engagement, mental health, poverty alleviation, and disaster resilience).	
Meso	**Case 10.2: B-CAUSE** Humanities (decolonized curricula, decolonial pedagogies, diversity issues, and cultural understanding in education) and Social Sciences (equity, inclusion, equity studies, equity-focused quality in higher education).		**Case 10.1: Disaster Response Work with Low-Income Communities** Humanities (cultural sensivity, indigenous knowledge, autoethnography, afrocentric theory, and Ubuntu principles) and Social Sciences (community engagement, mental health, poverty alleviation, and disaster resilience).	
Macro				

SDG 11: Sustainable Cities and Communities

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 11.2: Study on Travel Behavior and Active Mobility for a Greener University Campus** **Case 11.4: Enhancing Sustainable Mobility in Higher Education** Sciences (environmental science, sustainable mobility indicator, Life Cycle Assessment approach, product environmental footprint, STEM, data analysis on transportation choices, sustainable college campus, and impact on the environment analysis) and Social Sceinces (transport policies, benchmark analysis, commuting, transport choice, mobility behavior, urban sustainability, urban living conditions, behavior analysis, policy recommendations, and safety perception).	**Case 11.3: Participatory Approiach to Developing a Transport Hub** **Case 11.5: Project Management Education for Smart Cities** Sciences (smart cities, energy efficiency, STEM, architecture, landscape architecture, and transport studies) and Social Sciences (project management, sustainable cities and communities, urban sustainability, real-world challenges in the educational curricula, public transportation, cities, accessibility, public transport, sustainable transport hub, community engagement, accessibility, local needs, and design process).		
Meso	**Case 11.3: Participatory Approiach to Developing a Transport Hub** **Case 11.7: Integrating SDGs into Urban Planning Education** Sciences (integrated urbanism, urban planning, STEM, architecture, landscape architecture, and transport studies) and Social Sciences (sustainable spatial planning and development, societal structures and policies, program and course curricula, cities, accessibility, public transport, sustainable transport hub, community engagement, accessibility, local needs, and design process).	**Case 11.6: Problem-Based Learning for Sustainable Urban Development** **Case 11.7: Integrating SDGs into Urban Planning Education** Life Sciences (nutrition), Sciences (integrated urbanism, urban planning, sustainable ecological environments, architecture and industrial design, bioclimatic architecture), and Social Sciences (sustainable spatial planning and development, societal structures and policies, program and course curricula, sustainable cities and communities, urbanism, public space, multidisciplinary and interdisciplinary approaches, and faculty programs).	**Case 11.1: Sustainable Partnerships for E-Waste Management between University & a Local Cooperative** **Case 11.3: Participatory Approiach to Developing a Transport Hub** **Case 11.6: Problem-Based Learning for Sustainable Urban Development** Life Sciences (nutrition), Sciences (sustainable ecological environments, industrial design, bioclimatic architecture, architecture, landscape architecture, transport studies, STEM, chemistry, environmental sustainability, electric engineering, and e-waste management) and Social Sciences (sustainable cities and communities, urbanism, public space, multidisciplinary and interdisciplinary approaches, faculty programs, cities, accessibility, public transport, sustainable transport hub, local needs, design process, community engagement, education, cooperatives, and recycling).	**Case 11.1: Sustainable Partnerships for E-Waste Management between University and a Local Cooperative** Sciences (STEM, chemistry, environmental sustainability, electric engineering, and e-waste management) and Social Sciences (community engagement, education, cooperatives, and recycling).
Macro				

SDG 12: Responsible Consumption and Production

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 12.1: HeartLand** **Case 12.2: Packaging & Waste Management Decision Framework** **Case 12.3: Using Universities as Laboratories for Sustainable Cities** **Case 12.5: Micro-Enterprise Owners' Perspectives on the Contribution of Higher Education to Sustainability** **Case 12.6: Promoting Sustainable Consumption in HE through Co-Creative Processes** **Case 12.8: Attitudes of Agriculture, Environment & Health Sector in Food System** Humanities (applied ethnography, micro-enterprise owners perspectives, & international collaborations), Life Sciences (sustainable food, bio-based materials and sustainability in the agri-food sector, soil health, plant sward, livestock, sustainable agriculture, ecological sustainability, & human health), Sciences (food, sustainable diets, organic food, environmental sustainability, pro-environmental design, environmental impact, Life Cycle Assessment, material flow analysis, engineering methodolgoies, and environmental impact), and Social Sciences (attitude analysis, local food production, food waste reduction, labelling of food, responsible consumption, sustainable production, co-creative processes, sustainable lifestyle, apparel manufacturing, custom-made apparel, small and micro enterprises, business sustainable practices, textile industry, supply chains, energy consumption, collaborative economy, spart cities, living labs, packaging, packaging waste, market, circular economy, socio-technical approaches, involvement of end users, farm management, interdisciplinary research, and education for sustainability).	**Case 12.5: Micro-Enterprise Owners' Perspectives on the Contribution of Higher Education to Sustainability** **Case 12.6: Promoting Sustainable Consumption in HE through Co-Creative Processes** Humanities (applied ethnography and micro-entreprise owners perspectives), Sciences (responsible consumption, sustainable production, co-creative processes, sustainable lifestyle, environmental sustainability, pro-environmental design), and Social Sciences (apparel manufacturing, custom-made apparel, small and micro enterprises, business sustainable practices, textile industry).	**Case 12.6: Promoting Sustainable Consumption in HE through Co-Creative Processes** Humanities (applied ethnography) and Social Sciences (responsible consumption, sustainable production, co-creative processes, sustainable lifestyle).	
Meso	**Case 12.1: HeartLand** **Case 12.4: SDG 12 in Business Studies through Intercultural Virtual Collaboration** Humanities (intercultural virtual collaboration, intercultural knowledge, companies communication, cultural adaptation, and virtual exchange), Life Sciences (soil health, plant sward, livestock, sustainable agriculture, ecological sustainability, human health), Sciences (environmental impact), and Social Sciences (business studies, farm management, interdisciplinary research and education for sustainability).	**Case 12.4: SDG 12 in Business Studies through Intercultural Virtual Collaboration** **Case 12.7: Interdisciplinary Master's Degree in Forest Management in a Changing Climate** Humanities (intercultural virtual collaboration, intercultural knowledge, companies communication, cultural adaptation, virtual exchange), Interdisciplinar (interdisciplinary master), Life Sciences (forestry, forest ecosytems, biodiversity), and Social Sciences (forest resource-dependent communities and business studies).		
Macro				

SDG 13: Climate Action

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 13.3: Fossil fuel industry influence in higher education** **Case 13.4: Key insights from climate communication** **Case 13.5: Students' views on Education for climate justice** **Case 13.6: Climate change education in China and its effects on students' beliefs and attitudes** **Case 13.9: Preferences of non-industrial private landowners for alternative climate change mitigation strategies in Finnish forests** Sciences (climate sciences, fuel industry, energy transition, greening campus, evidence and indicators of climate change, climate models and predictions, wood and forests use, wood products), Social Sciences (decision making, social movements, industry tactics and influence, climate action obstruction, university partnerships, social change, public engagement,climate justice, students' opinions and expectations, HEIs policies, environmental concern, climate change education,climate change education, students' beliefs and attitudes, vulnerability, inequality of the impacts, importance of local governance, climate policies,effective climate policy, private forest owners, climate change mitigation, risk perception, political leaning, commercial forestry, climate action, land use change, adaptation), Humanities (ethics, climate communication, people values)	**Case 13.4: Key insights from climate communication** **Case 13.6: Climate change education in China and its effects on students' beliefs and attitudes** **Case 13.7: Climate emergency declaration of the University of Salamanca** **Case 13.10: Students' changes after attending a climate change course** Sciences (energy transition, greening campus, evidence and indicators of climate change, science knowledge, climate models and predictions,climate emergency, carbon footprint reduction), Social Sciences (social change, public engagement, climate change education and its impact, students' beliefs and attitudes, vulnerability, inequality of the impacts, importance of local governance, climate policies, climate emergency declaration, bottom-up approaches, community participation mechanism, climate action, mobility), Humanities (climate communication, people and students' values, hedonic pleasures)	**Case 13.4: Key insights from climate communication** **Case 13.9: Preferences of non-industrial private landowners for alternative climate change mitigation strategies in Finnish forests** Sciences (energy transition, greening campus, wood and forests use, wood products), Social Sciences (social change, public engagement,effective climate policy, private forest owners, climate change mitigation, risk perception, political leaning, commercial forestry, climate action, land use change, adaptation), Humanities (climate communication, people values)	**Case 13.4: Key insights from climate communication** Sciences (energy transition, greening campus), Social Sciences (social change, public engagement), Humanities (climate communication, people values)
Meso	**Case 13.1: A framework for climate change curriculum redevelopment within built environment degrees.** Sciences (greenhouse gas, warming, built environment), Social Sciences (greenhouse gas emission reductions, adaptation to climate change, cities, curricula of built environment degrees, curriculum development and change)	**Case 13.1: A framework for climate change curriculum redevelopment within built environment degrees.** **Case 13.2: Climate change education in semiarid and coastal regions of Mexico** **Case 13.8: Learning to change: climate action pedagogy** Sciences (greenhouse gas, warming, built environment, climate change program, semiarid and coastal regions, climate literacy), Social Sciences (greenhouse gas emission reductions, adaptation to climate change, cities, curricula of built environment degrees, curriculum development and change, community adaptability, resilience, active learning strategies, climate literacy, local challenges,learning to change, inside-out pedagogy, active citizenship, professional agency, collective intelligence, climate innovators), Humanities (hope).		
Macro				**Case 13.7: Climate emergency declaration of the University of Salamanca** Sciences (climate emergency, carbon footprint reduction) Social Sciences (climate emergency declaration, bottom-up approaches, community participation mechanism, climate action, mobility)

SDG 14: Life Below Water

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 14.1: Storytelling to Promote Undergraduate Students' Attitudes towards Animals** **Case 14.4: Mediterran Sea Literacy** Humanities (Mediterranean culture and history, storytelling, and multiperspective adoption), Life Sciences (marine biology, marine ecosystems, Mediterranean Sea, richness of life, biodiversity, human-animal relationship, and wild animals), and Social Sciences (Mediterranean Sea, literacy, ocean literacy, sea eoconomies, and attitude towards wild animals).	**Case 14.1: Storytelling to Promote Undergraduate Students' Attitudes towards Animals** **Case 14.4: Mediterran Sea Literacy** Humanities (Mediterranean culture and history, storytelling, and multiperspective adoption), Life Sciences (marine biology, marine ecosystems, Mediterranean Sea, richness of life, biodiversity, human-animal relationship, and wild animals), and Social Sciences (Mediterranean Sea literacy, ocean literacy, sea economies, and attitude towards wild animals).	**Case 14.4: Mediterran Sea Literacy** Humanities (mediterranean culture and history), Life Sciences (marine biology, marine ecosystems, Mediterranean sea, richness of life, biodiversity), Sciences (climate and weather, deep-sea relief, coastal lagoons), and Social Sciences (Mediterranean sea literacy, ocean literacy, sea economies).	
Meso		**Case 14.2: One Ocean Expedition** **Case 14.3: University-driven Coastal Partnerships to Address Ghost Gear Pollution** **Case 14.4: Mediterran Sea Literacy** Humanities (Mediterran culture and history, awareness campaigns and storytelling), Interdisciplinarity, Life Sciences (marine ecosystems, Mediterranean Sea, richness of life, biodiversity, ocean sustainability, coral watch, and marine biology), and Social Sciences (Mediterranean Sea literacy, ocean literacy, sea economies, coastal partnerships, multi-stakeholders, marine citizenship practices, behavioral science, sail training, team-based learning, team readiness assurance test, safety, and global citizen education).	**Case 14.3: University-driven Coastal Partnerships to Address Ghost Gear Pollution** Humanities (awareness campaigns), Interdisciplinarity, Life Sciences (marine biology, ocean sustainability, coral watch), Sciences (water, ghost gear cleanup), Social Sciences (coastal partnerships, multi-stakeholders, marine citizenship practices).	
Macro				**Case 14.4: Mediterran Sea Literacy** Humanities (mediterranean culture and history), Life Sciences (marine biology, marine ecosystems, Mediterranean sea, richness of life, biodiversity), Sciences (climate and weather, deep-sea relief, coastal lagoons), and Social Sciences (Mediterranean sea literacy, ocean literacy, sea economies).

SDG 15: Life on Land

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 15.1: Inventary of Flora from the Guilleries, Spain** **Case 15.2: SDGs, Forestry and Wood Science** **Case 15.3: Citizen Science and Green Spaces in Ghana** Life Sciences (biodiversity, biodiversity assessment, forestry, wood science, wood industry, renewable forest resources, plant biodiversity, botanical inventory, endemic and invasive species, ecology, and conservation), Sciences (ecological studies, environmental conservation, and ecosystem service provision), and Social Sciences (human interaction with the landscape, conservation policies, award-social recognition, citizen science, urban green spaces, people's perceptions of green spaces, national legislation, students' knowledge, and curricula reorientation).	**Case 15.3: Citizen Science and Green Spaces in Ghana** Life Sciences (biodiversity, biodiversity assessment), Sciences (ecosystem service provision), and Social Sciences (citizen science, urban green spaces, people's perceptions of green spaces).	**Case 15.3: Citizen Science and Green Spaces in Ghana** Life Sciences (biodiversity, biodiversity assessment), Sciences (ecosystem service provision), and Social Sciences (citizen science, urban green spaces, people's perceptions of green spaces).	
Meso	**Case 15.5: Guilleries Research Award** Life Sciences (biodiversity), Sciences (ecological studies, environmental conservation), and Social Sciences (human interaction with the landscape, conservation policies, award-social recognition).			
Macro				**Case 15.4: The University of British Columbia Botanical Garden (UBCBG) Contributing to the SDGs** Humanities (indigenous communities), Life Sciences (biodiversity, botanical garden, horticulture, metacollections), Sciences (restorage of degraded lands), and Social Sciences (conservation, biodiversity benchmarking).

SDG 16: Peace, Justice and Strong Institutions

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 16.1: Total Quality Management, SDGs and Erasmus+ Program** **Case 16.2: Curriculum Audits and Implications for Integrating SDGs in Business Schools** **Case 16.4: HE and SDG 16 in Fragile Contflict-Affected Contexts** **Case 16.5: A Holistic Islam-Based Academic Integrity Model for Malaysian HEIs** Social Sciences (academic integrity, integrity guidelines, islamic scholars, ethical issues, university agency, academic freedom, conflict-affected contexts, insecurity, public good, peacebuilding frameworks, business studies, integration of SDGs in business courses, social responsibility, accountable institutions, SDGs audits, curriculum mapping, curriculum guide for SDGs, integration, global leadership values, rule of law, justice, corruption, security, total quality management, higher education, leadership, evaluation and control, and Erasmus+ Program).	**Case 16.2: Curriculum Audits and Implications for Integrating SDGs in Business Schools** Social Sciences (business studies, integration of SDGs in business degree courses, social responsibility, accountable institution, SDGs audits, curriculum mapping, curriculum guide for SDGs integration, global leadership values, rule of law, justice, corruption, security)		
Meso		**Case 16.3: Law Professionals and Academics Together in the Design and Implementation of an Ethics Program** Social Sciences (law professionals, practical ethics, ethical dilemmas, law degree curricula, teaching of professional ethics).	**Case 16.3: Law Professionals and Academics Together in the Design and Implementation of an Ethics Program** Social Sciences (law professionals, practical ethics, ethical dilemmas, law degree curricula, teaching of professional ethics).	
Macro				

SDG 17: Partnerships for the Goals

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 17.1: Aligning Community Outreach Initiatives with SDGs** **Case 17.2: Achievement of SDG 17 through Community-University Engagement** **Case 17.3: Rethinking HEIs' Partnerships across Sectors** Sciences (sustainable technologies, industry 4.0, technology, artificial intelligence, and natural language processing) and Social Sciences (cross-sectorial partnerships, engagement benefits and outcomes, material and affective commitments, partnerships mapping and classification, domain theory, multi-stakeholder, community engagement, knowledge co-creation, partnerships, and community outreach projects).			
Meso	**Case 17.4: Academics' Experiences with North/South Partnerships** Humanities (North/South imaginaries), Life Sciences (African health academics visions), and Social Sciences (North/South partnerships, international exchange, and cooperation, capacity building).		**Case 17.4: Academics' Experiences with North/South Partnerships** Humanities (North/South imaginaries), Life Sciences (African health academics visions), and Social Sciences (North/South partnerships, international exchange, and cooperation, capacity building).	
Macro				

All SDGs

	Research	Teaching and Learning	Community Engagement	Management and Operations
Micro	**Case 18.1: Sustainability in the Mining Industry** **Case 18.5: Sustainability Initiative of the Carnegie Mellon University** Humanities (interdisciplinary education, equity, and programming), Sciences (data analysis, engineering, climate action strategies, mining operations, environmental impact), and Social Sciences (policy, engagement metrics, sustainable development frameworks, addressing social inequalities, and economic development).	**Case 18.3: ImpSDGup Course on Sustainable Development Skills for HE Teachers** **Case 18.4: Teaching Innovation Network for the Inclusion of the SDGs in Teaching** **Case 18.5: Sustainability Initiative of the Carnegie Mellon University** **Case 18.6: SDG Toolkit for Teaching and Learning** **Case 18.7: Sustainability in Law Teaching Conference** Humanities (interdisciplinary education, programming, equity), Sciences (data analysis, engineering, and climate action strategies), Social Sciences (sustainability and legal frameworks, Law teaching, sustainable curriculum development, education toolkit, teaching guidelines, policy, engagement metrics, sustainable development frameworks, inclusion of SDGs in HE courses, teaching approaches, and transformative action for sustainability).		
Meso		**Case 18.3: ImpSDGup Course on Sustainable Development Skills for HE Teachers** **Case 18.4: Teaching Innovation Network for the Inclusion of the SDGs in Teaching** **Case 18.6: SDG Toolkit for Teaching and Learning** **Case 18.7: Sustainability in Law Teaching Conference** Social Sciences (sustainability and legal frameworks, Law teaching, education, curriculum development, education toolkit, teaching guidelines, inclusion of SDGs in HE courses, teaching approaches, sustainable curricula, and transformative action for sustainability).		**Case 18.5: Sustainability Initiative of the Carnegie Mellon University** Humanities (interdisciplinary education, equity, and programming), Sciences (data analysis, engineering, and climate action strategies), and Social Sciences (policy, engagement metrics, and sustainable development frameworks).
Macro	**Case 18.2: The University of Rijeka SDG Portal** Multidisciplinar.			**Case 18.5: Sustainability Initiative of the Carnegie Mellon University** Humanities (interdisciplinary education, equity, and programming), Sciences (data analysis, engineering, and climate action strategies), and Social Sciences (policy, engagement metrics, and sustainable development frameworks).

CASES CATALOGUE

Economic Modeling of Poverty

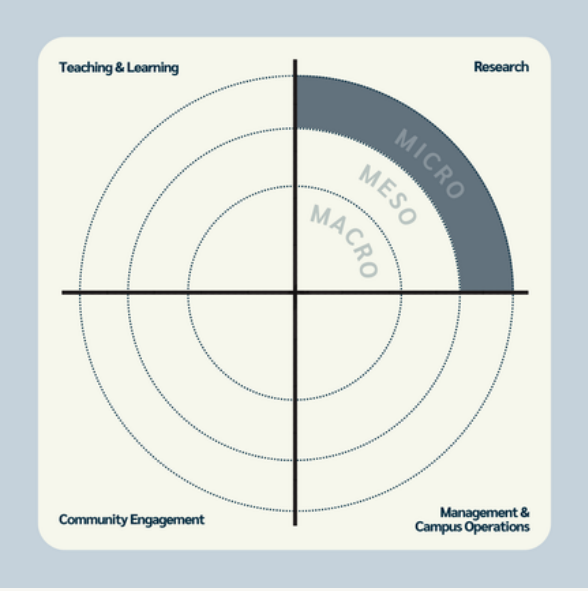
Kifayat Ullah and Muhammad Tariq Majeed, Ripah International University and Quaid-i-Azam University (School of Economics), Pakistan

Description of the practice

The current case, on Economic Modeling, is an example of a significant academic contribution to Sustainable Development Goals (SDGs) through its innovative use of an economic model to examine multidimensional poverty and human development at the district level in Pakistan. Kiyafat Ullah and Muhammad Tariq Mejeed, the authors of this measure, employed a Spatial Autoregressive Approach (SAR) to study the direct and indirect impacts of institutional quality, infrastructure, education, demographic factors, and climate on poverty reduction and human development, aiming to eradicate poverty in all its forms by providing a deeper understanding of the factors that influence poverty dynamics and human development in a regional context.

Main contribution

Development of an economic model that analyzes the multidimensional factors influencing poverty and human development at the district level in Pakistan, offering valuable insights for policymakers to promote sustainable development.



Micro - Meso - Macro Relationship

This is a micro level contribution in research

Fields of knowledge

Social Sciences (economics and public policy)

Reference

Ullah, K., Majeed, M.T. District-level multidimensional poverty and human development in the case of Pakistan: does institutional quality matter?. *GeoJournal 88*, 561–581 (2023). https://doi.org/10.1007/s10708-022-10600-z

Inter-University Sustainable Development Research Program

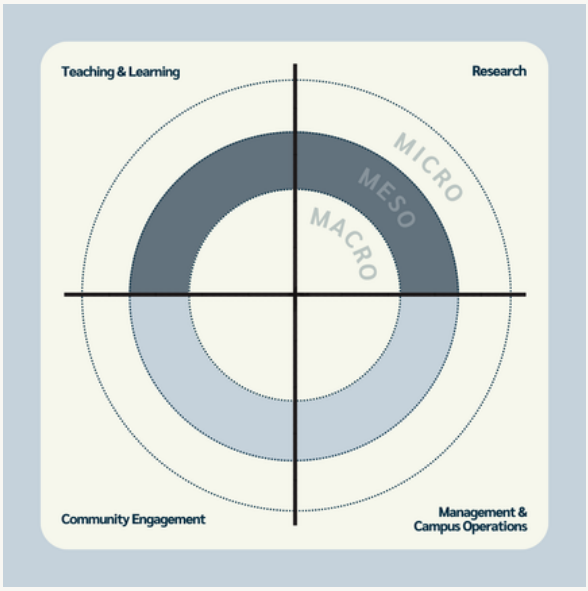
Walter Leal Filho, Violeta Orlovic Lovren, Markus Will, Amanda Lange Salvia, and Fernanda Frankenberger, Hamburg University of Applied Sciences and Manchester Metropolitan University, Germany and United Kingdom.

Description of the practice

The Inter-University Sustainable Development Research Programme (IUSDRP) is a platform which fosters collaboration to undertake more research to address the sustainable development goals. The main aim of the programme is the creation of interdisciplinary and cross-faculty teams and partnerships between member universities to advance international research in sustainable development. In this context, a consortium of academics from several countries have investigated, through international surveys, which are the barriers delaying the implementation of SDG 1 and propose targeted solutions towards the integration of the goal into governance frameworks.

Main contributions

- Global academic collaboration through research, education, and policy recommendations by improving the educational access, participatory governance, and identifying barriers to implementation.
- Joint training of PhD students.
- Production of high-quality research and joint publications (including journal articles, books, book chapters and reports).



Micro - Meso - Macro Relationship

This is a contribution at meso level in research and teaching, that also has an impact on the areas of community engagement, management and campus operations.

Fields of knowledge

Life Sciences (sustainable development and poverty alleviation) and Social Sciences (policy, governance, and education).

Reference

Haw-Hamburg: IUSDRP. (February 13, 2025). *Inter-University Sustainable Development Research Programme*. https://www.haw-hamburg.de/en/ftz-nk/programmes-and-networks/iusdrp/

Support of Indigenous Communities in South Africa

Inocent Moyo and Hlengiwe Marvelous Sweetness Cele, University of Zululand, South Africa.

Description of the practice

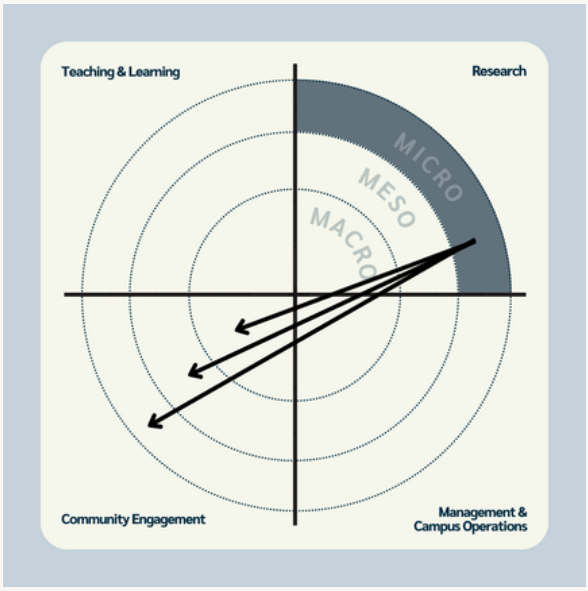
The initiative describes a significant contribution to SDGs by academics at higher education institutions (HEIs) that highlights the role of HEIs in addressing Goal 1. This is achieved through research initiatives aimed at empowering indigenous communities in the Okhahlamba-Drakensberg region of KwaZulu-Natal, South Africa, by partnering these communities to understand their developmental needs and challenges from a bottom-up approach.

Main contribution

Empowerment of indigenous communities in the Okhahlamba-Drakensberg region to face specific needs and challenges through community-based research and capacity-building workshops, focusing on practical solutions for poverty alleviation and sustainable resource management and livelihood development.

Micro - Meso - Macro Relationship

This is a contribution at micro level in research. It can have a potential impact on the meso and macro levels in community engagement.



Fields of knowledge

Life Sciences (sustainable resource management and environmental conservation), Humanities (preservation of indigenous knowledge and cultural heritage), and Social Sciences (capacity-building and socio-economic community development).

Reference

Moyo, I. and Cele, H.M.S. (2021). Protected areas and environmental conservation in KwaZulu-Natal, South Africa: on HEIs, livelihoods and sustainable development. *International Journal of Sustainability in Higher Education*, 22(7), pp. 1536-1551. https://doi.org/10.1108/IJSHE-05-2020-0157

Research on Sociodemographic Drivers of Food Insecurity

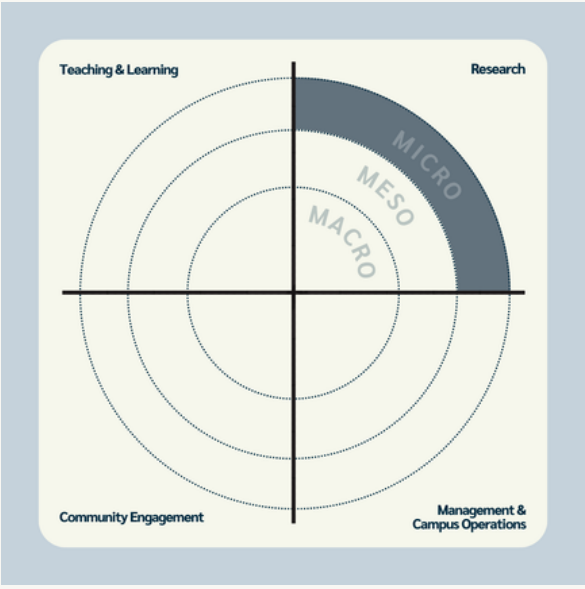
Ghose Bishwajit, Center for Social Capital and Environmental Research, Canada; and Sanni Yaya, Imperial College London, United Kingdom.

Description of the practice

The initiative is a nationwide and cross-sectional study conducted in Cameroon to uncover the drivers of food insecurity using data from the 2018 Cameroon Demographic and Health Survey. The authors used a solid analytical framework to assess sociodemographic predictors of food insecurity, such as education, wealth, and land ownership to provide a comprehensive evidence base that would later be used to address hunger and malnutrition.

Main contributions

- Nationwide study of food (in)security in Cameroon that identifies key socio-demographic drivers and vulnerabilities, and proposes sustainable solutions to combat hunger and malnutrition.
- It also provides a foundation for academic discourse on food insecurity.



Micro - Meso - Macro Relationship

This is a micro level contribution in research.

Fields of knowledge

Life Sciences (nutrition and public health) and Social Sciences (socio-demographic analysis, economic factors influencing food insecurity, and policy recommendations).

Reference

Bishwajit, G., Yaya, S. (2024). Uncovering the drivers of food insecurity in Cameroon: insights from a nationwide cross-sectional analysis. *BMC Nutrition* *10*(137). https://doi.org/10.1186/s40795-024-00952-9

Indigenous Knowledge, Sustainable Food Practices and Women Empowerment in Australia

Joanna McCormack, Christy Noble, Shannon Rutherford, Lynda J Ross, and Andrea Bialocerkowski, Griffith University, The University of Queensland, and Queensland University of Technology, Australia.

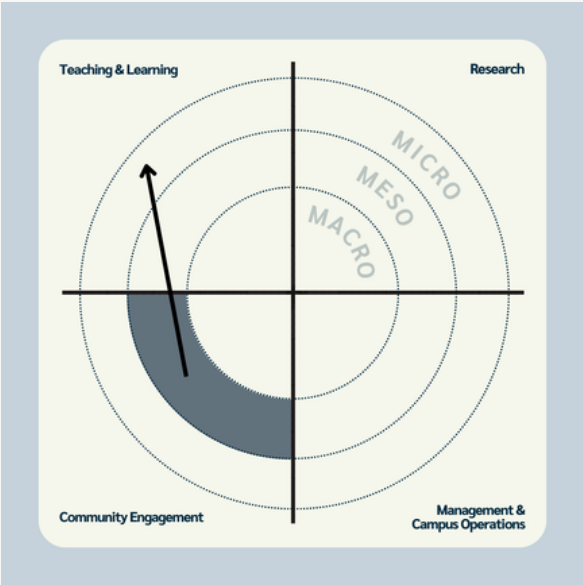
Description of the practice

The project provides a living case study for investigating sustainable food systems through the intersection of sustainability, nutrition, and community well-being. It implied the collaboration of academic dietitians with impoverished fringe communities. University staff engaged in teaching local women from marginalized groups how to farm using indigenous techniques. Women pooled their harvest seeds, which contributed to sustainability and growth.

Over time, this measure expanded to impact 3,500 families across 50 villages and fostered the opening of restaurants that featured local and indigenous produce, thereby integrating economic opportunities with sustainable practices in the community.

Main contribution

Empowerment of marginalized women through sustainable farming using indigenous techniques and fostering food security and economic opportunities.



Micro - Meso - Macro Relationship

This is a contribution at meso level in community engagement that has an impact in teaching at micro level.

Fields of knowledge

Life Sciences (nutrition, agriculture, and sustainable farming practices) and Social Sciences (community development and economic empowerment).

Reference

McCormack, J., Noble, C., Rutherford, S. et al. (2024). Integrating the sustainable development goals into health professions' curricula: using the nominal group technique to guide their contextualisation. *BMC Medical Education 24*(972). https://doi.org/10.1186/s12909-024-05968-0

Addressing Food Insecurity in Ethiopia

Henok Fasil Telila (The World Bank and University of Rome Tor Vergata) and Elsa Abebe Sima (UNIFAD, Italy).

Description of the practice

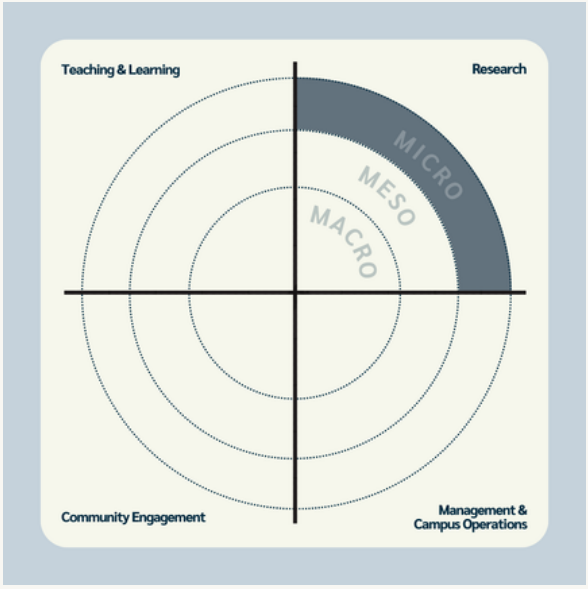
Telila and Sima conducted research that looked at food insecurity and malnutrition in Ethiopia. In the study, the authors analysed food insecurity by using the Food Insecurity Experience Scale (FIES) methodology. They obtained the data from two main sources: the Gallup World Poll and through qualitative interviews with key informants in Ethiopia (for structural drivers).

Their study was based on the examination of food insecurity in Ethiopia during the years 2014-2019, and they found that 15,8% of the population experienced severe food insecurity and 52,1% moderate to severe food insecurity in 2019. People aged 35-44 years had a higher likelihood of food insecurity and 37% of children under 5 years were in chronic malnutrition.

Authors call for urgent policy interventions that address the following root causes of malnutrition and food insecurity: age, income, rurality, political instability and gender inequality. They suggest using an integrated approach focused on traditional crops and the empowerment of women and smallholder farmers.

Main contributions

- A comprehensive analysis of food insecurity in Ethiopia through the identification of key sociodemographic drivers.
- Evidence-based policy recommendations focused on multi-sectoral strategies to address poverty, agricultural challenges, gender inequality and climate vulnerability.



Micro - Meso - Macro Relationship

It is a contribution at the micro level in research.

Fields of knowledge

Life Sciences (addressing agricultural challenges and child nutrition) and Social Sciences (analysis of socio-economic factors, gender inequality, and policy implications on food insecurity).

Reference

Telila, H. F. & Sima, E. A. (2024). Quantifying food insecurity in Ethiopia: Prevalence, drivers, and policy implications. *Cogent Social Sciences, 10*(1). https://doi.org/10.1080/23311886.2024.2318862

Sustainable Practices on Urban Agriculture for Food Security in Ghana

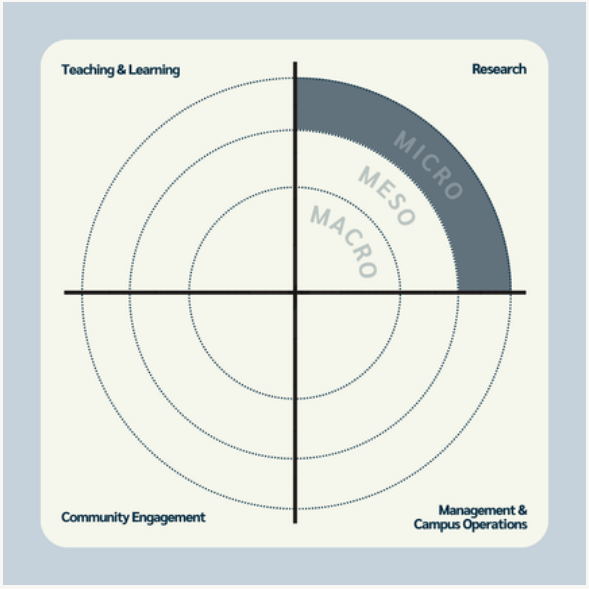
Peter Dery Bolang, Issah Baddianaah, and Issaka Kanton Osumanu, University for Development Studies, Tubman University, and University of Business and Integrated Development Studies, Liberia and Ghana.

Description of the practice

This case examines urban agriculture practices in Ghana's Wa Municipality. In this research, authors used a multinomial logit model and a survey questionnaire to analyze how a sample of 364 formal sector employees participate in urban agriculture activities (including food crops and animal production) and contribute to food availability. The findings of the study show that just 37,9% of the participating employees are involved in urban agriculture and the majority of them are from the educational sector. The factors influencing the involvement in these activities are: the household size, the marital status, ease to get land and credit, and the household income and expenditure. The major challenges confronting formal sector employees in the production process include poor rainfall, pests and diseases, poor soil fertility and limited access to fertilizers.

Main contributions

- Identifying barriers for Integrating urban agriculture in Ghana
- Providing policy recommendations for Ghana's Ministry of Food and Agriculture, to enhance food availability and food security in this country.



Micro - Meso - Macro Relationship

This is a contribution in research at the micro level.

Fields of knowledge

Life Sciences (agricultural practices, food security, and environmental sustainability) and Social Sciences (policy analysis, socio-economic factors, and community engagement in urban agriculture).

Reference

Bolang, P. D., Baddianaah, I., & Osumanu, I. K. (2024). Towards meeting the food needs of urban households in sub-Saharan Africa: an analysis of formal sector employees' participation in agricultural production in urban Wa, Ghana. *Cogent Social Sciences, 10*(1). https://doi.org/10.1080/23311886.2024.2309711

Embedding Vegetables in Nutrition Education in Physiology Courses

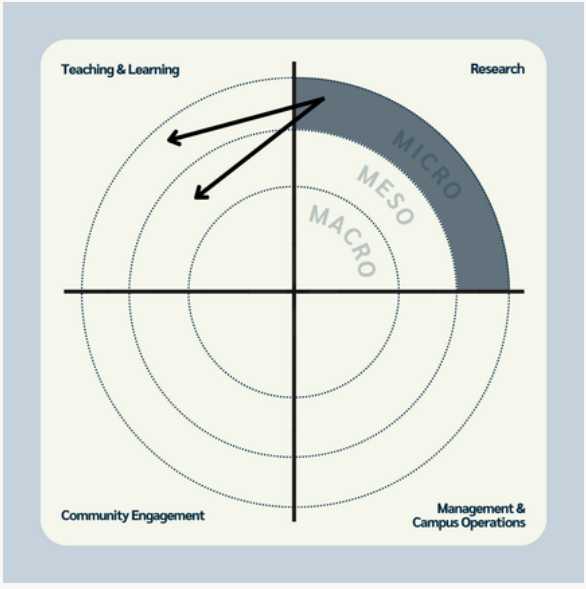
Christian Moro, Charlotte Phelps, and Michelle McLean, Faculty of Health Sciences and Medicine, Bond University, Australia

Description of the practice

Moro, Phelps and McLean undertook research on vegetable knowledge and vegetable education in Australia. The investigation consisted of two different parts. The first one was a survey addressed to first-year medical students and premedical students in order to know their knowledge on vegetables. The second part was a literature review and websites assessment regarding vegetable consumption and dietary guidelines. The main findings identified in nutrition education were that students' had a limited knowledge of food and general nutrition literacy, and that there were conflicting guidelines surrounding nutritional recommendations in the literature and the government websites. The authors proposed the following three suggestions to address three challenges: (1) to emphasizee the public health benefits of increasing dietary vegetable intake and its impact on reducing malnutrition; (2) to treat vegetables and fruit as distinct dietary categories; and (3) to embed in the curriculum of physiology courses content related to a healthy vegetable-rich diet.

Main contribution

Integrating vegetable consumption contents in nutrition education into physiology course programs to enhance future healthcare professionals' ability to promote healthy eating.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research that has direct impact in the micro and meso level in the teaching and learning domain.

Fields of knowledge

Life Sciences (nutrition, health and physiology), Science (sustainability and environmental impacts of diet choices), and Social Sciences (health education and public health).

Reference

Moro, C., Phelps, C. and McLean, M. (2023). Don't forget the veggies! Identifying and addressing a lack of vegetable education in physiology. *Advances in physiology Education 47*, 726-731. https://doi.org/10.1152/advan.00052.2023

Assessing Sustainability Knowledge in the Agri-Food Departments of Ibero-American Universities

Ana Guerrero and Juan D. Gómez-Quintero, University of Zaragoza, Spain.

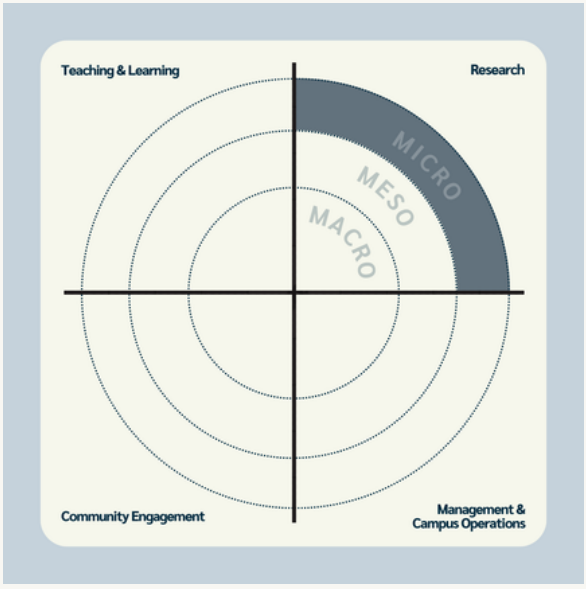
Description of the practice

This research investigated the knowledge of the sustainable development goals and civic engagement of academics from the agri-food field departments of universities from Spain, Brazil, and Colombia. The aim of the study was to offer an overview of the level of knowledge and alignment with Goal 2 (Zero Hunger) and Goal 12 (Responsible Consumption and Production).

Knowledge and engagement varied significantly between countries: while Spain obtained the highest values in most of the variables relating to knowledge of the SDGs, followed by Brazil, Colombia showed the highest levels of engagement with the community. Having universities as hubs for fostering sustainability through the adaptation of curricula and research, the final conclusion is that knowledge and engagement must be improved if we are to achieve the SDGs, and education and research play a vital role in bridging the SDG implementation gap in the agri-food field.

Main contribution

Research findings of university academics' knowledge about the agri-food sector and the promotion of sustainable practices aligned with the SDGs, to address local and global environmental challenges.



Micro - Meso - Macro Relationship

This is a contribution in research at the micro level.

Fields of knowledge

Life Sciences (organic agriculture, sustainable farming, and animal welfare), Sciences (environmental sciences and biodiversity), and Social Sciences (education, policy adaptation, and community engagement with SDGs).

Reference

Guerrero, A. & Gómez-Quintero, J. D. (2021). Assessing knowledge and engagement on sustainable development goals: exploratory research in the agri-food departments of Ibero-American universities. *Spanish Journal of Agricultural Research, 19*(3), 1-13 (e0303) https://doi.org/10.5424/sjar/2021193-17931

The Role of African Academic Libraries in Achieving SDGs 2 and 3

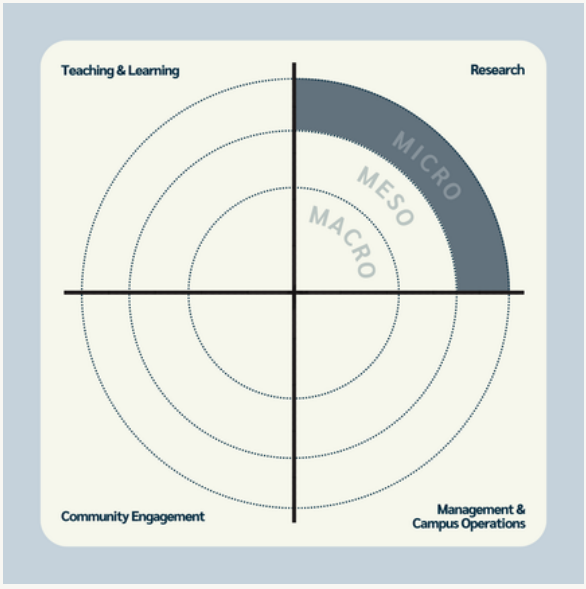
Francisca Chinyeaka Mbagwu Federal (University of Technology, Owerri, Nigeria), Martha Lyaka (Makerere University Library, Uganda), Jackline E. Kiwelu (Kampala International University, Uganda), Lydia Nyantakyi-Baah (Ghana Institute of Journalism, Ghana), and Marlene Holmner (University of Pretoria, South Africa).

Description of the practice

This study investigated the contributions of academic libraries in Ghana, Nigeria and Uganda in achieving sustainable development goals 2 and 3. The authors carried out both an exploratory approach (literature review) and a case study methodology by interviewing librarians from the Federal University of Technology Library Owerri (Nigeria), Ghana Institute of Journalism Library (Ghana), Makerere University library and Kampala International University (Uganda). Main results show that librarians are working to extend library services beyond the university community to assist the surrounding rural population with agricultural and health-related key information. To do so, they collaborated with agricultural academics and experts, student volunteers and local stakeholders. The study shows examples of initiatives with beneficial outcomes such as the introduction of a new variety of cassava, known as “Yellow Cassava” in Owerri, Nigeria, and the organization of training sessions to improve its cultivation.

Main contributions

- Libraries contributing with agricultural and health information to their communities
- Improving food production, people’s health and well-being, enabling food security and reducing hunger.



Micro - Meso - Macro Relationship

This is a contribution in research at the micro level.

Fields of knowledge

Life Sciences (agricultural practices, crop cultivation, and nutrition) and Social Sciences (community engagement, education, and improving livelihoods).

Reference

Mbagwu, F. C., Lyaka, M., Kiwelu, J. E., Nyantakyi-Baah, L., & Holmner, M. (2020). Achieving sustainable development goals two and three: Role of academic libraries. *Library Philosophy and Practice (e-journal)*, 3995. https://digitalcommons.unl.edu/libphilprac/3995

The Creation of a Mobile Application for the Early Detection of the Huntington Disease

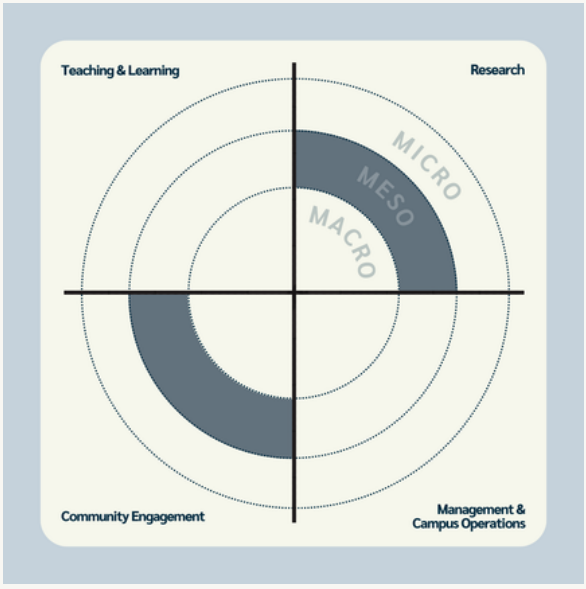
Andrius Lauraitis, Rytis Maskeliūnas and Robertas Damaševičius, Kaunas University of Technology (KTU), Lithuania

Description of the practice

The Huntington's rare disease is caused by an inherited defect in a single gene that provokes a progressive brain disorder that causes uncontrolled movements, emotional problems, and loss of thinking ability.
Andrius Lauraitis, Rytis Maskeliūnas and Ronertas Damaševičius from Kaunas University of Technology (Lithuania) have created a mobile application, with the aim of recognising early symptoms of Huntington's disease. The app has been designed in cooperation with physicians and Huntington Disease Association. The app provides its user with a series of tests to check the presence of the symptoms. If the probability of symptoms is detected, the user is informed and encouraged to contact medical professionals for further advice and evaluation.

Main contribution

Creation of a mobile application for recognising early symptoms of the Huntington's disease.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in research and community engagement.

Fields of knowledge

Life Sciences (patient health diagnosis).

Reference

Lauraitis, A., Maskeliūnas, R., & Damaševičius, R. (2018). ANN and fuzzy logic based model to evaluate Huntington disease symptoms. *Journal of healthcare engineering, 2018(4581272)*, 1-10. https://doi.org/10.1155/2018/4581272

The Finnish Therapy Navigator

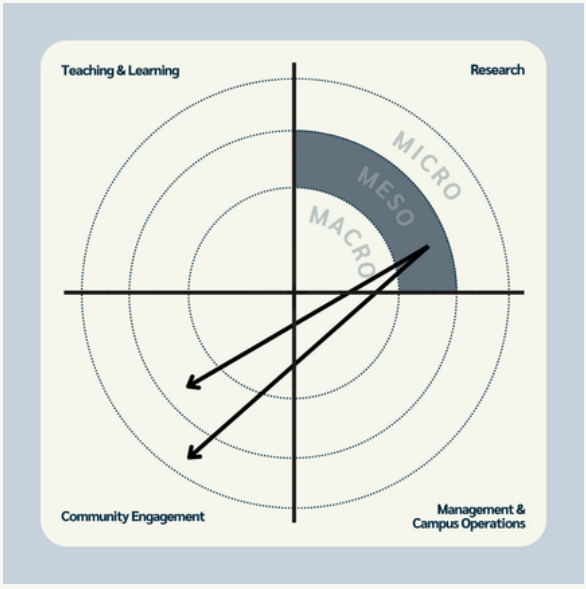
Samuli Saarni, Sara Nurminen, Kasperi Mikkonen, Helena Service, Tino Karolaakso, Jan-Henry Stenberg, Jesper Ekelund and Suoma Saarni, Tampere University, Finland

Description of the practice

The First-Line Therapies Initiative is an example of a good practice to reform and enhance mental health care in Finland. Established in 2020, the initiative seeks to address challenges in the mental health care system, including delayed access to treatment and limited resources, among others, while ensuring that care remains sustainable and scalable, which is deeply aligned with Finland's national social and healthcare reform, and aims to make mental health services more accessible and effective for diverse populations. As part of the initiative, the Finnish Therapy Navigator (FTN) was designed as a digital support tool to streamline the treatment as well as the assessment of individual needs. In this contribution, authors present the results of the piloting of the FTN in six regions in Finland between October 2021 and May 2022. Main findings show that professionals estimated that the FTN had a positive impact on their work and 93% of users wanted to keep it as a permanent tool.

Main contribution

Analysis of the impact of the Finnish Therapy Navigator too in the improvement of mental health care accessibility and efficiency in Finland.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in research with direct implications at the micro and meso levels of the community.

Fields of knowledge

Life Sciences (psychological treatments and patient care) and Social Sciences (mental health care, social well-being, and healthcare system reforms).

Reference

Saarni, S. I., et. al. (2022). The Finnish therapy navigator – Digital support system for introducing stepped care in Finland. *Psychiatria Fennica, 53*, 120-137. https://helda.helsinki.fi/server/api/core/bitstreams/c19862fa-e647-4506-9dab-f28a657e7634/content

Micro-Credentials and Sustainable Education Competences

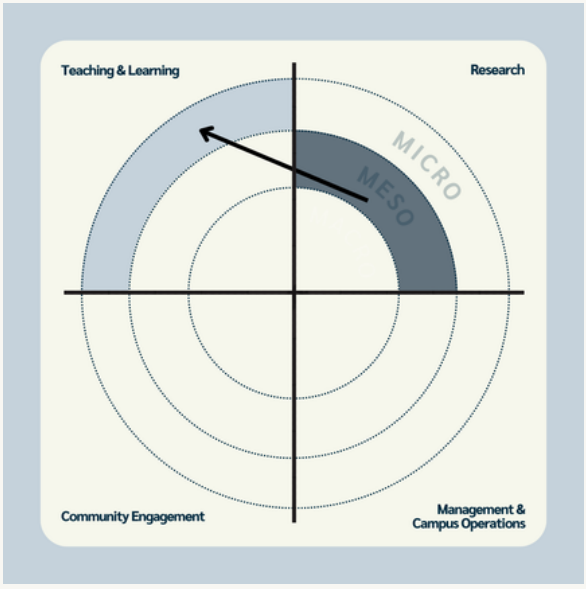
Jaume Ametller, Jesús Granados, Marta Gual and Raquel Heras (EduSTA Project) University of Girona, Spain

Description of the practice

EduSTA is an Academy project focused on sustainable education competences and its accreditation through micro-credentials or badges. The University of Girona has piloted the introduction of the competences of Conscious Change Agent and Systems Thinking Promoter in two courses of the Bachelor degrees in Early Childhood and Primary School Education. Some students enrolled in these courses applied and obtained digital badges which recognize and certify their competences and skills in sustainability-driven service-learning projects and the integration of system thinking in the development of educational materials. The initiative promotes transformative sustainable education practices in higher education.

Main contribution

Integration of sustainability education into teacher training by creating micro-credentials that recognize sustainability competencies.



Micro - Meso - Macro Relationship

This is a contribution at meso level in research and a contribution at micro level in teaching.

Fields of knowledge

Sciences (Systems Thinking Promoter) and Social Sciences (sustainable education, Conscious Change Agent).

Reference

Academy for Sustainable Future Educators (EduSTA). (September 23, 2024). *Reflection on Integration of Pilots into Existing Courses – the Catalan case*. https://projects.tuni.fi/edusta/blogs/reflection-on-integration-of-pilots-into-existing-courses-the-catalan-case/

Transdisciplinarity and the Sustainable Development Indicator Exercise (SDIE)

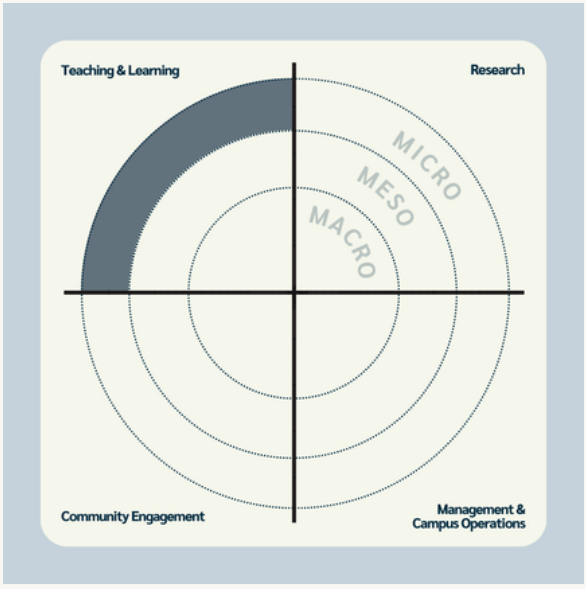
Jörg Balsiger, University of Geneva, Switzerland

Description of the practice

The Sustainable Development Indicator Exercise (SDIE), led by Jörg Balsiger at the University of Geneva, is an innovative educational initiative designed to enhance students' understanding and skills in sustainability through a transdisciplinary approach that includes role-playing and hands-on, experiential learning. SDIE consists of a classroom simulation of a transdisciplinary project in which students work in groups and assume the role of policy advisors. They engage in evaluating sustainability indicators, the creation of a multi-criteria decision-making framework, and the presentation of their findings in an environment that encourages collaboration and reflection.

Main contributions

- The Sustainable Development Indicator Exercise (SDIE).
- A conceptual framework that distinguishes between soft, inclusive, reflexive, and hard transdisciplinarity.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in teaching and learning.

Fields of knowledge

Social Sciences (sustainability indicators, policy-making, transdisciplinarity, decision-making processes).

Reference

Balsiger, J. (2015). Transdisciplinarity in the classroom? Simulating the co-production of sustainability knowledge. *Futures*, *65*, 185–194. https://doi.org/10.1016/j.futures.2014.08.005

AcSuLA Programme for University Teacher Training on Sustainability

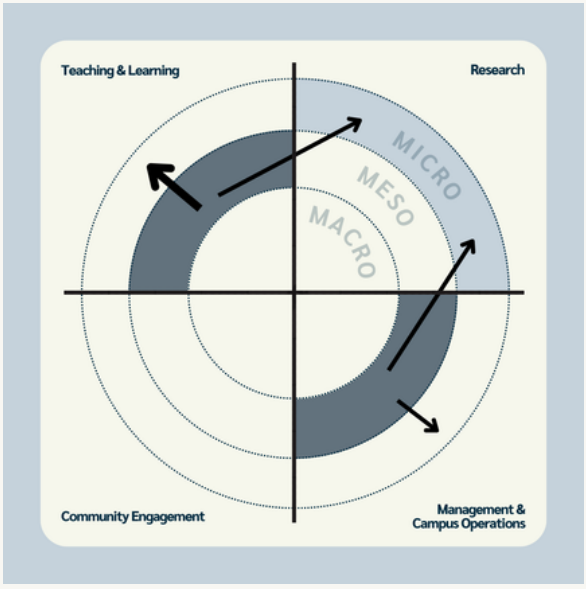
Norka Blanco-Portela, Catholic University Santísima Concepción (Colombia), María de Fátima Poza-Vilches and José Gutiérrez-Pérez, University of Granada, Mercè Junyent-Pubill, Autonomous University of Barcelona, Leslie Collazo-Expósito, University of Girona, Carmen Solís-Espallargas, University of Sevilla, and Javier Benayas del Álamo, Autonomous University of Madrid (Spain).

Description of the practice

"Academy Sustainability Latin America" (AcSuLA) is a mentoring programme where faculty experts in curricular sustainability from four Spanish universities act as mentors of faculty academics from several universities in Colombia, Peru and Chile. The operational dynamics of AcSuLA have been based on the methodological logic of participatory action research (PAR) in Network Type 4.0 format, where participation is stipulated as a strategy for dynamizing the model in all its phases. Participants worked in teams and designed and applied pedagogical strategies for the integration of sustainability and the Agenda 2030 in curricula in each university.

Main contributions

- University teacher training in education for sustainability (ESD).
- Integration of ESD in curricula.



Micro - Meso - Macro Relationship

This is a contribution at meso level in teaching and management that has an impact at micro level in teaching and management. The research of the process constitutes also a contribution at micro level.

Fields of knowledge

Social Sciences (curricula, education for sustainability).

Reference

Blanco Portela, N., et al. (2020). Estrategia de investigación-acción participativa para el desarrollo profesional del profesorado universitario en educación para la sostenibilidad: "Academy sustainability Latinoamérica" (ACSULA). *Profesorado: revista de currículum y formación del profesorado, 2020, 24*(3), 100-123. https://doi.org/10.30827/profesorado.v24i3.15555

Leadership and Gender Equality at the University of the Basque Country (EHU)

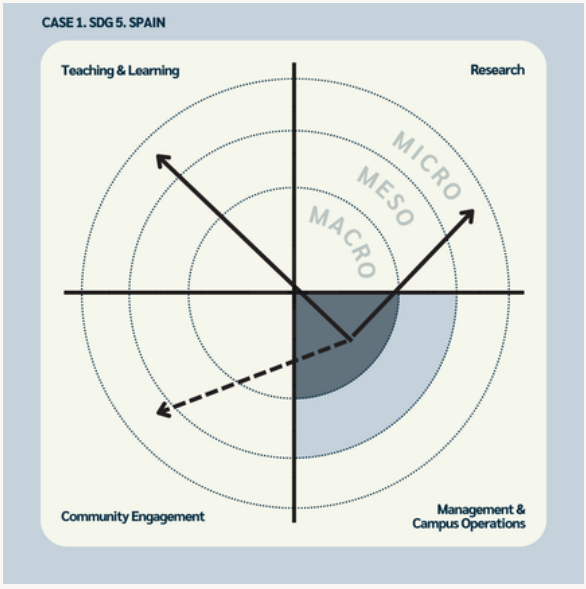
Idoia Fernández, Estíbaliz Sáez de Cámara & Leire Imaz, University of the Basque Country (UPV-EHU), Spain

Description of the practice

In 2019, the UPV-EHU launched its renewed educational model, IKD i3, which prescribes that all learning activities must combine learning, research and sustainability. Accordingly, an equality, an inclusion and a planet «campuses» were created, each functioning as a sector plan based on gender equality. The first action was the creation of the Equality Office (2018) to make gender perspective and feminist theory part of the teaching environment as well as of final-year undergraduate and Master's projects. Moreover, it addresses gender violence, sexist conduct, and gender-based discriminatory attitudes in the university environment through the UPV-EHU Protocol Against Gender Violence, and the use of an effective tool created to support any individual member of the university experiencing this type of violence. Akademe leadership programme is the final initiative for academic women, which provides training and support to help them develop leadership skills, encouraging them to take on key roles within the university.

Main contribution

Addressing gender equality through the Equality Campus with its equality office, the protocol against gender violence, and the Akademe leadership programme.



Micro - Meso - Macro Relationship

This is a management and campus operations contribution at macro level with implications at meso and micro levels. It also has an impact at micro level on research, teaching and learning, and community engagement.

Fields of knowledge

Social Sciences (gender equality, gender violence, women leadership).

Reference

Fernández-Fernández, I., Sáez de Cámara, E., & Imaz, L. (2024). What is gained when university leadership reviews and recommits to equality considering the 2030 Agenda for sustainable development. *Feminismo/s, 43*, 245-272. https://doi.org/10.14198/fem.2024.43.10

Gender-inclusive Leadership Perceptions among Japanese University Students

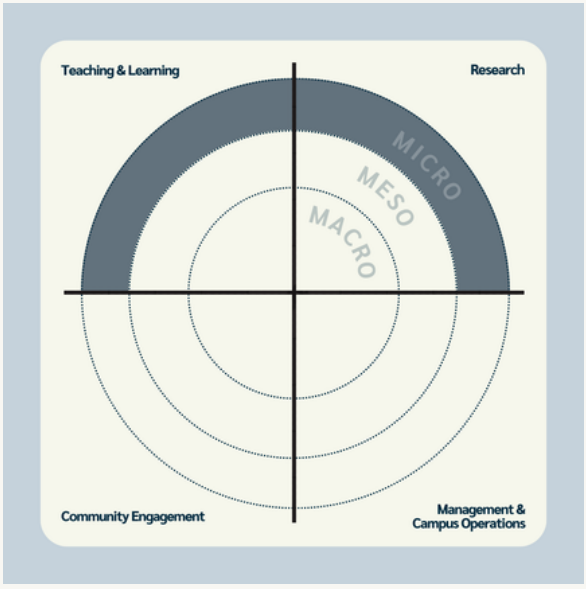
Soyhan Egitim, Tokyo University, Japan

Description of the practice

This action-research study explored gender equality in leadership roles perceptions among Japanese university students, and analyzed how their views evolved after participating in a nine-week action learning program embedded within four Content and Language-Integrated Learning (CLIL) courses at two private universities in Japan. The findings indicated that incorporating a critical inquiry-based action learning approach into CLIL classes enhanced students' awareness of gender equality in leadership positions. This was achieved by providing opportunities for students to investigate concepts related to leadership and gender, understand their peers' perspectives, engage in critical self-reflection to identify personal biases and limitations, and develop a more impartial and inclusive understanding of gender roles in leadership and power dynamics.

Main contributions

- The inclusion of gender in education programs.
- Analysis of the impact of CLIL courses on students' change of perspectives regarding gender equality in leadership.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research and teaching and learning.

Fields of knowledge

Social Sciences (Gender equality leadership).

Reference

Egitim, S. (2024). Promoting gender-inclusive leadership perceptions among Japanese university students: A nine-week critical inquiry-based action learning program. *International Journal of Educational Research Open, 7*, 100362. https://doi.org/10.1016/j.ijedro.2024.100362

Including Gender Equality in Engineering Teaching and Research

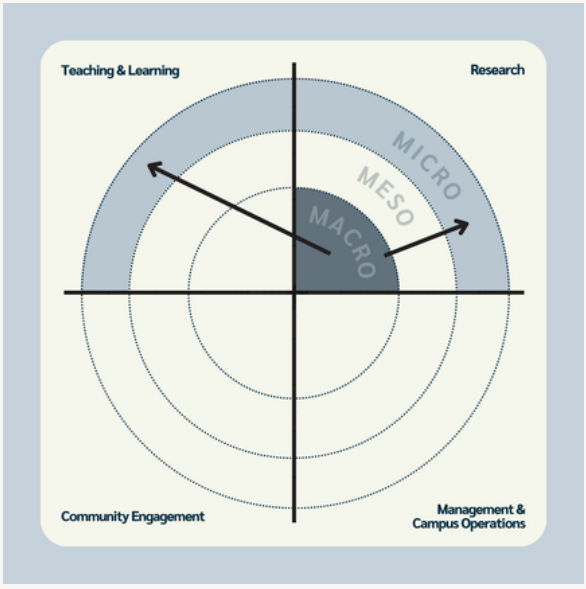
Marta Peña and Elisabet Mas de les Valls, Polytechnics University of Catalonia- BarcelonaTech (UPC), Spain

Description of the practice

During the 2018/2019 academic year, a pilot project titled "Gender Dimension in Teaching" was carried out at the UPC as part of an action aimed at including SDG6 in teaching and research in engineering. 41 voluntary university teachers from 8 Bachelor's and Master's Degrees of the UPC were recruited and participated in face-to-face discussions for the creation of specific teaching resources and research. The main outcomes are: a teacher self-assessment tool about gender, a students' gender equality awareness questionnaire, and a guide for the incorporation of the gender dimension in engineering teaching (which includes teaching methodologies, classroom management and types of assessment). The recommendations also present a classification of subjects and how to embed gender according to their nature (scientific foundations, technological and professional).

Main contributions

- Teacher self-assessment tool about gender.
- Students' gender equality awareness questionnaire.
- Guide for the incorporation of the gender dimension in engineering teaching.



Micro - Meso - Macro Relationship

This is a contribution at macro level in research that enables contributions at micro level in research and teaching and learning.

Fields of knowledge

Sciences (gender in engineering) and Social Sciences (gender equality, gender education).

Reference

Peña, M., de les Valls, E.M. (2024). Inclusion of the gender equality sustainable development goal in engineering teaching and research. *Environment, Development and Sustainability, 26*, 25007–25025. https://doi.org/10.1007/s10668-023-03667-2

Attainment and Gender Equality in Turkish Higher Education

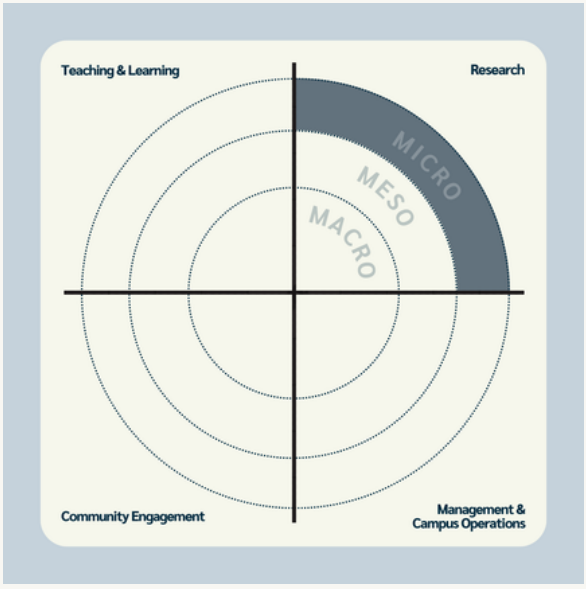
Cagla Okten and Merve Demirel, Bilkent University, Turkey, and Asena Caner, TOBB University of Economics and Technology, Turkey

Description of the practice

During the period 2006-2008, the Turkish higher education system underwent a massive expansion, resulting in the creation of 41 new public universities and a 60% increase in the number of available slots. This study investigates the impact of this increase on equal access and attainment between men and women. The results indicate that the expansion increased higher education attainment for both men and women, but did not reduce the gender gap. When examining how the scale of the expansion varied across different fields of study, it is evident that the most significant growth occurred in social sciences and engineering. The expansion in social sciences benefited men and women almost equally, whereas in engineering— a field traditionally favored by men—the benefits were greater for men than for women, thereby widening the gender gap in higher educational attainment.

Main contribution

Research study about the impact of the expansion of the Turkish higher education system on gender equality (in terms of access and attainment).



Micro - Meso - Macro Relationship

This is a contribution at micro level in research.

Fields of knowledge

Socials Sciences (gender and higher education)

Reference

Caner, A., Demirel, M., & Okten, C. (2019). *Attainment and Gender Equality in Higher Education: Evidence from a Large Scale Expansion.* IZA - Institute of Labor Economics. http://www.jstor.org/stable/resrep59303

Experiences of Women Leaders in the Higher Education Sport Sector

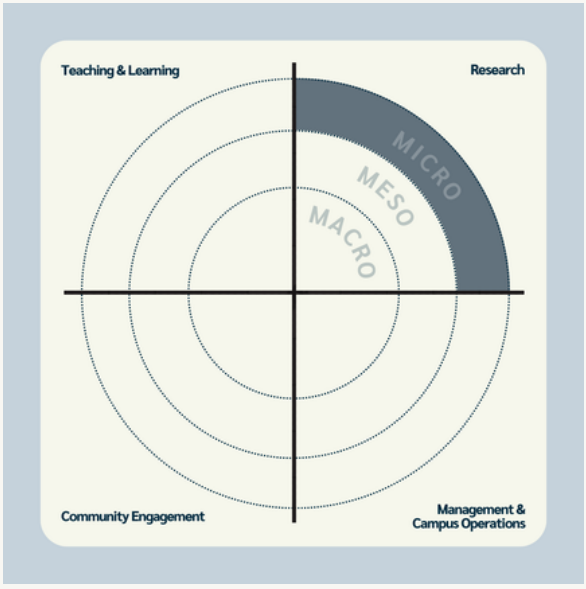
Shamira Naidu-Young, Anthony May, Stacey Pope & Simon Gérard Durham University, United Kingdom

Description of the practice

This study used interviews to explore how women leaders in the UK higher education sports sector accumulate and convert capital, based on Bourdieu's Model of Field Capital and Habitus. Many respondents believed HE sport is more equal than broader sport, partly due to university diversity policies. However, gendered practices and assumptions persist in both fields. While HE appears less of a barrier to women's leadership than other sports settings, gendered habits remain implicit. The research highlights the role of the physical body in capital and power, especially regarding menopause, which affects physical capital and self-perception but not economic or cultural capital. Motherhood also impacts capital, often leading to losses in economic, symbolic, and physical resources. Participants without children saw potential career benefits, underscoring ongoing gender inequalities in the workplace.

Main contribution

Study on the impact of gender inequalities in women leaders in the UK higher education sector.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research.

Fields of knowledge

Social Sciences (gender in the sports sector).

Reference

Naidu-Young, S., May, A., Pope, S., & Gérard, S. (2024). The experiences of women leaders in the higher education sport sector: Examining the gendered organization through Bourdieu's model of field, capital and habitus. *Sociology of Sport Journal*, *41*(3), 255–266. https://doi.org/10.1123/ssj.2023-0094

Improving Attitudes and Self-Efficacy for Gender Equality among Male STEM Academics

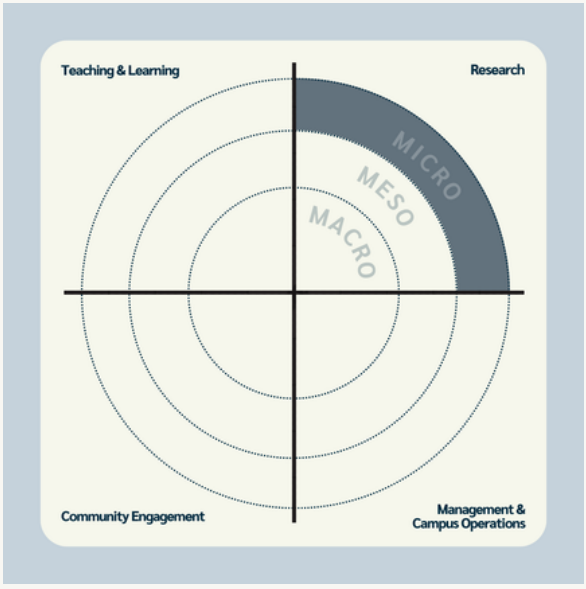
Zachary W. Petzel, Lynn Farrell, Teresa McCormack, Rhiannon N. Turner, Karen Rafferty, & Ioana M. Latu,
Newcastle University, United Kingdom

Description of the practice

In this research, authors investigated the impact of two experiments using virtual reality with STEM male educators. They suggested that effective interventions should include data-driven presentations on the prevalence and impact of gender inequalities in STEM, along with practical strategies for educators to address these issues in teaching and in decisions when hiring new staff. Such evidence can reduce gender biases, disparities and ignorance and boost confidence. Results indicate that perspective-taking as a female scientist increases support for equality initiatives, particularly when STEM male educators recognize the severity of disparities. Guided by the social identity model of collective action, these techniques suggest that awareness of injustices and their relevance to social identity are key to motivating change. Overall, these findings provide a foundation for developing high-tech training tools to advance equality efforts in higher education.

Main contribution

Research findings of the impact of high-tech training in improving gender equality perspectives in STEM male educators.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research.

Fields of knowledge

Sciences (STEM male academics attitudes towards gender equality).

Reference

Petzel, Z.W., Farrell, L., McCormack, T. et al. (2024). A collective action approach to improving attitudes and self-efficacy towards gender equality among male STEM academics. *European Journal of Psychology of Education 39*, 3161–3184. https://doi.org/10.1007/s10212-024-00844-3

Evaluation of the Impact of Gender Equality Initiatives

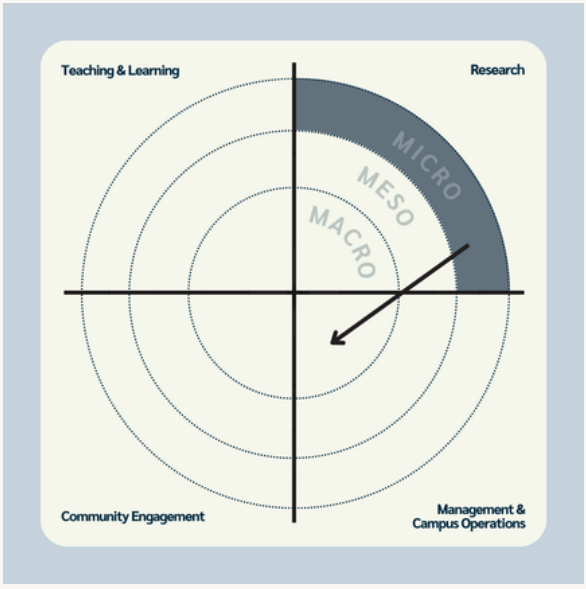
Helen Taylor, Charles Sturt University, and Sue Williamson, University of New South Wales, Australia

Description of the practice

This contribution presents a methodological approach to support practitioners in the evaluation of gender equality progress in programs and initiatives in global organisations, as well as universities, and organisations in both the public and private sectors. It incorporates a theoretical foundation of feminist research principles to establish the importance of using a collaborative approach, such as research co-design, as a practical methodology that facilitates qualitative assessment of gender equality. The multiphase process of research co-design methodology has the following four phases: engagement (identifying and engaging with co-designers), formation (co-designing focus groups protocols), ethics application and fieldwork (data collection and debriefing).

Main contribution

Methodological approach for evaluating gender equality initiatives.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research with impact at macro level in management and campus operations.

Fields of knowledge

Social Sciences (gender equality evaluation).

Reference

Taylor, H., & Williamson, S. (2024). Co-Design to Evaluate the Impact of Gender Equality Initiatives: Lessons for Practitioners, Evaluators and Researchers. *The Qualitative Report, 29*(7), 2067-2088. https://doi.org/10.46743/2160-3715/2024.6779

Assessment of Learning Outcomes of Economics Students

Elvira Arrondo Diez and Nagore Aranguren Gómez, University of Deusto, Spain.

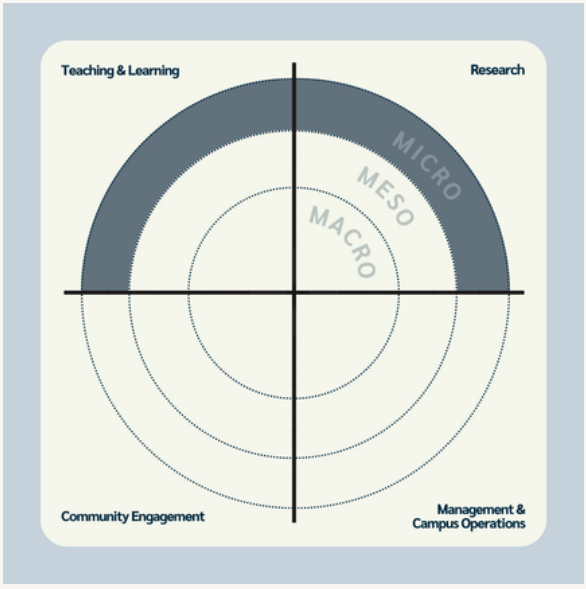
Description of the practice

The objective of this study has been to assess the cognitive, socio-emotional and behavioral learning outcomes of a group of students attending a course in the degree of Economics at the University of DEusto (Spain). The course has used water use and sanitation (SDG 6) together with the development of the creativity competence to reflect on sustainability and the Agenda 2030.

The results confirm the suitability of including the SDGs for the development of the creativity competence. Students had increased their knowledge of SDGs and awareness of the importance of water use, and manifested their willingness to act in a more responsible way with regard to water issues. In addition, they presented a favorable attitude when addressing sustainability challenges: they highlighted the importance of training and identified the need to reinforce personal commitment when developing sustainable behaviors in daily lives. In this case, gender was a significant variable as there is greater sensitivity on the part of women.

Main contribution

Analysis of the impact of including the Agenda 2030 and the SDGs in an economics course on students' knowledge and behaviour.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research and teaching and learning.

Fields of knowledge

Social Sciences (creativity competence, social use of water).

Reference

Arrondo Diez E. & Aranguren Gómez N. (2023). Evaluación de los resultados de aprendizaje de la competencia creatividad vinculada al ODS6: Agua limpia y saneamiento. Un estudio de caso en el contexto universitario. Revista Complutense de Educación, 34(4), 845-855. https://doi.org/10.5209/rced.80166

Community-Centred Design Thinking as a Scalable STEM Learning Intervention

Kimberly C. Breen, Mary Elizabeth Dotson, Megan Madonna, Hope Springate, Valentina Alvarez and Nirmala Ramanujam, Duke University, USA; and Daniela Mariucci Peña, "Fundación Desarrolla Guatemala para la Educación y Salud" (FUNDEAGUA), Guatemala

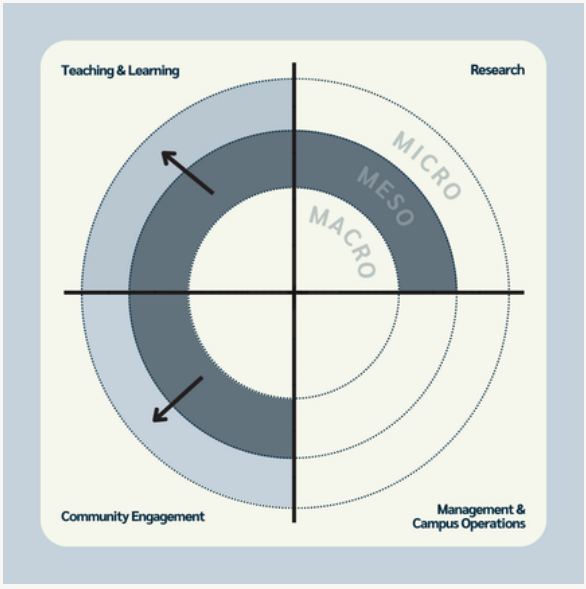
Description of the practice

The Ignite program, created by the Centre for Global Women's Health Technologies (GWHT) at Duke University with the participation of "Fundación Desarrolla Guatemala para la Educación y Salud" (FUNDEAGUA), integrates the human-centred design process into STEM education to advance social justice through an iterative research-to-practice methodology (through solving real-world problems).

In this work, authors evaluate the efficacy of the Ignite Water curriculum as a scalable and sustainable intervention for STEM opportunity gaps (SDG4), and clean water (SDG6), and investigate the ability of a community-centred design thinking initiative to transform learners' behavioral indicators, including their knowledge, attitude, and awareness. The findings show that students' knowledge and awareness related to the local water pollution and treatment options increased. Female learners demonstrated an increase in self-efficacy in engineering careers, while male learners' self-efficacy for math and community problem-solving increased.

Main contribution

The creation of the Ignite Water curriculum and its impact on students' learning.



Micro - Meso - Macro Relationship

This is a contribution at meso level in teaching and learning, community engagement and research, with direct impact on the micro level in teaching and community engagement.

Fields of knowledge

Sciences (water pollution and treatment), Social Sciences (problem-based learning, design thinking, gender self-efficacy).

Reference

Breen, K. C., Dotson, M. E., Madonna, M. C., Asturias, G., Peña, D. M., Springate, H., & Ramanujam, N. (2023). Community-Centered Design Thinking as a Scalable Stem Learning Intervention. Advances in Engineering Education, *11*(2), 2-33. https://doi.org/10.18260/3-1-1153-36042

Assessment of Water-Migration-Gender Interconnections in Ethiopia

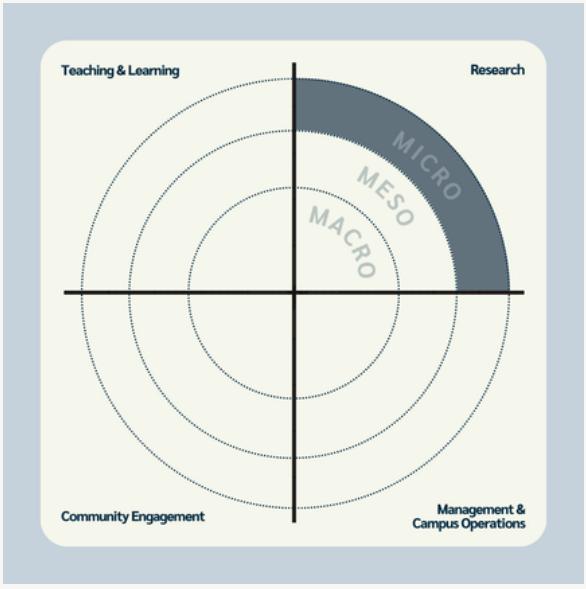
Lisa Färber, The United Nations University and Maastricht University, The Netherlands, and
Nidhi Nagabhatla and Ilse Ruyssen, The United Nations University Institute on Comparative Regional Integration Studies (UNU-CRIS), Belgium

Description of the practice

This research aims to contribute to the growing body of studies exploring the connection between water scarcity, migration, and gender in regions where large populations live under vulnerable conditions and are frequently affected by water-related challenges. A qualitative approach was adopted, combining a literature review and interviews with experts, to investigate the influence of water stress-related dynamics on migration and gender disparities in Ethiopia. The findings include an analysis of Ethiopia's water stress and climate change situation in Ethiopia across 3 scenarios, and an assessment of the interlinkages between water scarcity and migration. The main conclusions pointed out that (1) Displacement in Ethiopia is driven by insufficient water availability, and (2) men migrate more than women to find new income opportunities, while women can gain access to opportunities and broader options, contributing to greater gender equality.

Main contribution

Research on water-migration-gender interconnections in Ethiopia.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research.

Fields of knowledge

Sciences (water stress), Social Sciences (migration and gender equality).

Reference

Färber, L., Nagabhatla, N., & Ruyssen, I. (2022). Assessment of water-migration-gender interconnections in Ethiopia. Frontiers in Human Dynamics, 4, 858229. https://doi.org/10.3389/fhumd.2022.858229

Thai Wisdom for Green Chemical Analysis

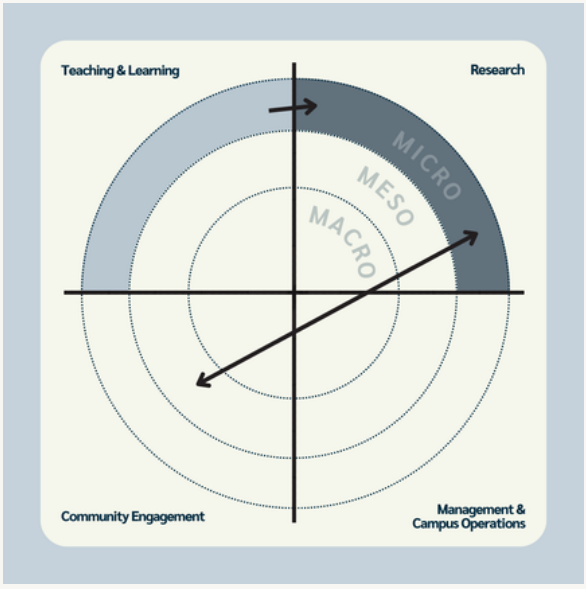
Kanokwan Kiwfo, Siripat Suteerapataranon, Dujrudee Chinwong, Pathinan Paengnakorn, Surarong Chinwong, Narong Kotchabhakdi, Chalermpong Saenjum, Monnapat Vongboot, and Kate Grudpan, Chiang Mai University; and Chonnipa Yeerum, Piyanat Issarangkura Na Ayutthaya, and Kullapon Kesonkan, King Mongkut's University of Technology Thonburi, and Piyatida Panitsupakamol, Maharaj Nakorn Chiang Mai Hospital, Thailand.

Description of the practice

This initiative uses Thai local wisdom to develop green chemical analysis as a green innovation to minimize chemical waste and protect the environment. The iron assay method detects iron elements in water using ground guava leaf extract as a natural reagent and it has been implemented as a learning tool for chemistry education. The kit included equipment, standard and buffer solutions and a manual. Educators in six universities in Thailand implemented the kit in their courses and adapted its use according to the course's learning outcomes. The kit implementation was evaluated by students through a survey. The results showed that students were remarkably satisfied with the natural-reagent iron assay kit in terms of usability, learning achievement, green chemistry and portability.

Main contribution

A learning kit for using the iron assay method.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research and teaching and learning with a direct connection with the community's local knowledge.

Fields of knowledge

Sciences (water pollution, natural reagents, green chemical analysis), Social Sciences (learning toolkits, local wisdom).

Reference

Kiwfo, K., Yeerum, C., Issarangkura Na Ayutthaya, P., Kesonkan, K., Suteerapataranon, S., Panitsupakamol, P., Chinwong, D., Paengnakorn, P., Chinwong, S., Kotchabhakdi, N., Saenjum, C., Vongboot, M., & Grudpan, K. (2021). Sustainable Education with Local-Wisdom Based Natural Reagent for Green Chemical Analysis with a Smart Device: Experiences in Thailand. Sustainability, 13(20), 11147. https://doi.org/10.3390/su132011147

Rainwater as a Source of Drinking Water in Vietnam

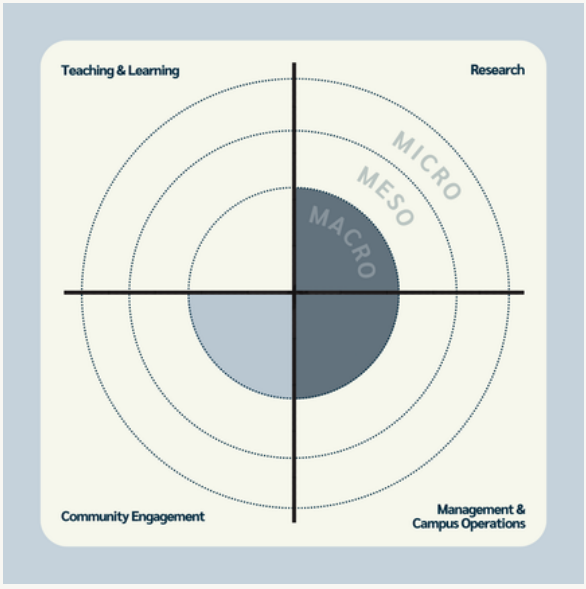
Thi Thuy Bui, Thuyloi University and Duc Canh Nguyen, Ton Duc Thang University, Vietnam.

Description of the practice

Ton Duc Thang University in Vietnam implemented an innovative Rainwater for Drinking (RFD) system using local labor and materials. The initiative was a successful case of a well-designed RFD system in terms of technical, economic, and social aspects, aiming at promoting the utilization of rainwater for drinking purposes in urban areas. The public acceptance of the RFD project was assessed through interviews with a total of 100 participants, including students, teachers, and staff. The questionnaires addressed the reliability of rainwater for drinking purposes as well as user satisfaction regarding system operation, maintenance, and economic benefits.

Main contribution

A technical system for using rainwater for drinking.



Micro - Meso - Macro Relationship

This is a contribution at macro level in management and operations, research and community engagement.

Fields of knowledge

Sciences (rainwater use, water and sanitation, drinking water).

Reference

Bui, T. T., Nguyen, D. C., Han, M., Kim, M., & Park, H. (2021). Rainwater as a source of drinking water: A resource recovery case study from Vietnam. *Journal of Water Process Engineering, 39*, 101740. https://doi.org/10.1016/j.jwpe.2020.101740

Teacher Candidates Addressing Global Water Crisis through Service-Learning

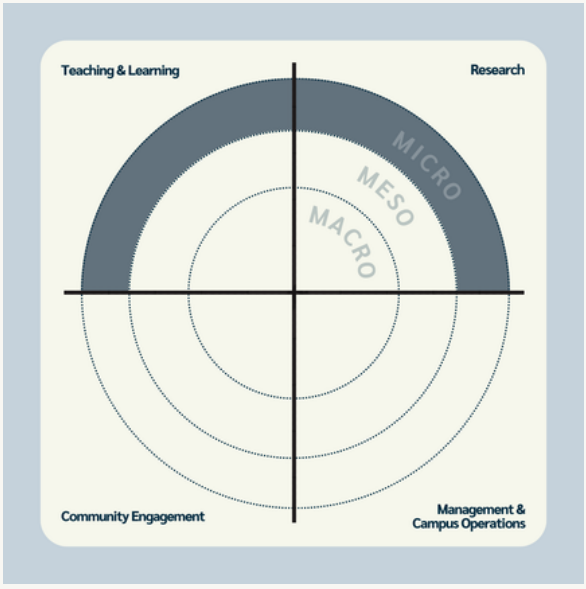
Erik Jon Byker, University of North Carolina, and Vicki Ezelle-Thomas, Austin State University, USA

Description of the practice

Service-learning is a methodology that helps teacher candidates navigate the global landscape and find ways to investigate the world and take action in response to global issues. In this initiative, a group of 49 teacher candidates/students were involved in service-learning projects related to water, sanitation and hygiene (WASH) in an eastern region of the USA. The authors investigated the impact of this methodology in students acquisition of the global citizenship competence by using case study research design. The findings of this study show that participants developed global competencies and also began to form an identity as a global citizen.

Main contribution

Research findings about the impact of service-learning projects related to WASH in students global competence development.



Micro - Meso - Macro Relationship

This is a contribution at micro level in teaching and learning and research.

Fields of knowledge

Sciences (water scarcity, water sanitation), and Social Sciences (service-learning, global citizenship).

Reference

Byker, E. J., & Ezelle-Thomas, V. (2021). Preparing Teacher Candidates with Global Competencies: Taking Action on the Global Water Crisis with Service Learning. *Journal of Research in Childhood Education*, *35*(2), 268–280. https://doi.org/10.1080/02568543.2021.1880996

MOOC on Urban Wastewater Treatment for Civil-Engineers

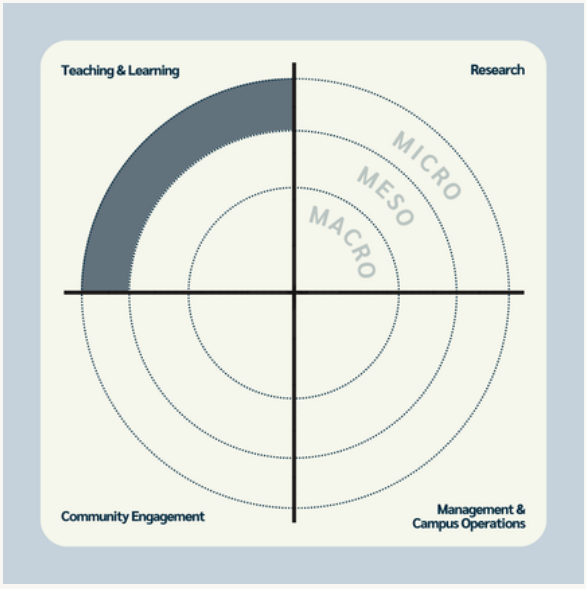
Eva Gómez-Llanos and Pablo Durán-Barroso, School of Technology, University of Extremadura, Spain

Description of the practice

This initiative consists of a MOOC about urban waste-water treatment applied to higher education in civil engineering, that was designed and hosted on the Miríadax platform and used in the University of Extremadura. The MOOC design was based on three pillars: student autonomy, short and direct methodology, and social support. The program included five modules with the following contents: urban water-cycle management, urban waste-water treatment (description and parameters), urban waste-water treatment plants (water and sludge lines) and unconventional debugging techniques. More than 4000 students enrolled in the MOOC in the three editions and the completion rate was superior to 35%.

Main contribution

A MOOC about wastewater management.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in teaching.

Fields of knowledge

Sciences (water cycle management, urban wastewater treatment, wastewater treatment plants).

Reference

Gómez-Llanos, E., & Durán-Barroso, P. (2020). Learning Design Decisions in Massive Open Online Courses (MOOC) Applied to Higher Education in Civil-Engineering Topics. *Sustainability, 12*(20), 8430. https://doi.org/10.3390/su12208430

Population's Perceptions of Water Use and Its Involvement in Water Conservation Efforts

María Luisa de Lázaro Torres, Pilar Borderías Uribeondo and Francisco José Morales Yago, Geography Department, Universidad Nacional de Educación a Distancia, Spain

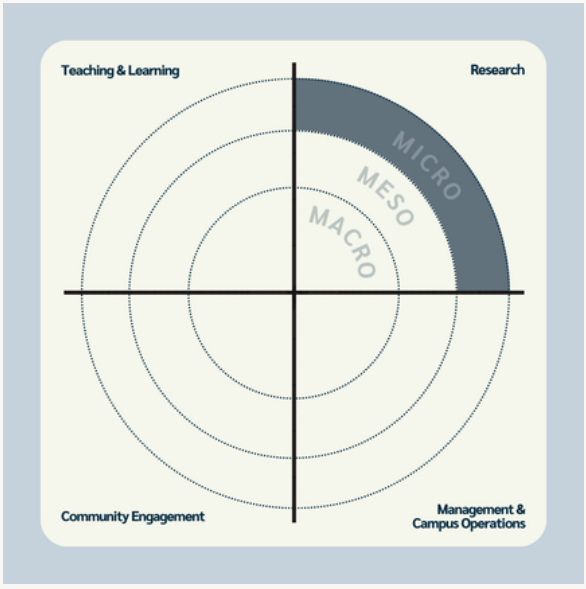
Description of the practice

Water availability, sustainable water management, and sanitation are critical issues in Spain. This research uses data from the Spanish National Institute of Statistics to explore the Spanish population's perceptions of water use and their involvement in water conservation efforts. The data was collected through an online survey distributed to all Spanish communities, with responses received from 445 individuals.

The main findings indicate that the majority of respondents are aware of the need to improve water use efficiency, although not everyone has read about specific measures or strategies. Participants generally believe that climate change could impact water resources and recognize that drinking water is a scarce resource. However, most respondents do not consider if water at their place of residence is well-managed.

Main contribution

Analysis of Spanish people's perception of water issues.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Sciences (water management, water scarcity, sanitation).

Reference

de Lázaro Torres, M. L., Borderías Uribeondo, P., & Morales Yago, F. J. (2020). Citizen and Educational Initiatives to Support Sustainable Development Goal 6: Clean Water and Sanitation for All. *Sustainability*, *12*(5), 2073. https://doi.org/10.3390/su12052073

Energy Efficiency Actions at a Brazilian University and Their Contribution to SDG 7

Bianca Gasparetto Rebelatto, Amanda Lange Salvia, Giovana Reginatto, Rangel Casanova Daneli and Luciana Londero Brandli, University of Passo Fundo, Brazil

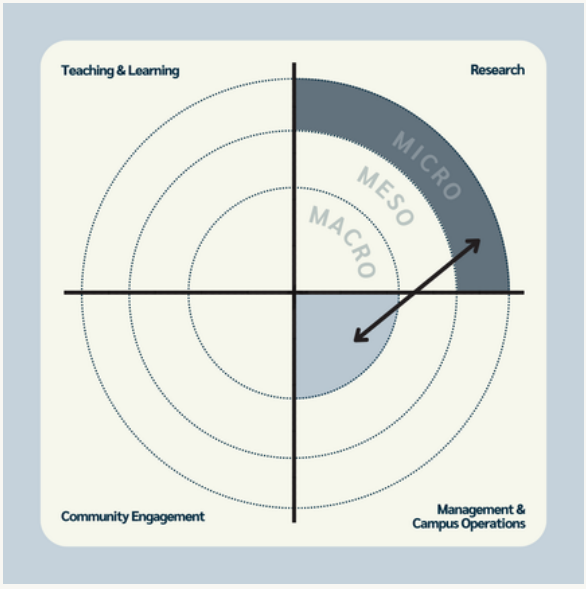
Description of the practice

This contribution examines recent energy efficiency initiatives implemented by the University of Passo Fundo (Brazil) to support Goal 7: Affordable and Clean Energy. The analysis focuses on three key projects:

- Lighting – LED Lamps Project: Aimed at enhancing energy efficiency across the university's library campus and main avenue by replacing fluorescent lamps with LED lighting.
- Photovoltaic Solar Power Generation: Involves the installation of a 54-panel solar array oriented northward to maximize solar exposure and generate renewable energy.
- Participation in the Free Energy Market: The university's efforts to integrate into the free energy market, thereby reducing its ecological footprint through the exclusive use of clean, renewable energy sources.

Main contribution

University sustainable energy efficiency initiatives focused on lighting, solar power, and the free energy market.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research that analyses a contribution at macro level in Management and campus operations.

Fields of knowledge

Sciences (Sustainable energy within higher education, environmental science, sustainability studies), Social Sciences (energy policy and education for sustainable development (ESD).

Reference

Rebelatto, B.G., Lange Salvia, A., Reginatto, G., Daneli, R.C. and Brandli, L.L. (2019). Energy efficiency actions at a Brazilian university and their contribution to sustainable development Goal 7. *International Journal of Sustainability in Higher Education, 20*(5), 842-855. https://doi.org/10.1108/IJSHE-01-2019-0023

Between the Patent and Development: A View from Chilean Academics

Sulan Wong, Universidad de La Frontera and Julio Rojas-Mora, Universidad Católica de Temuco, Chile

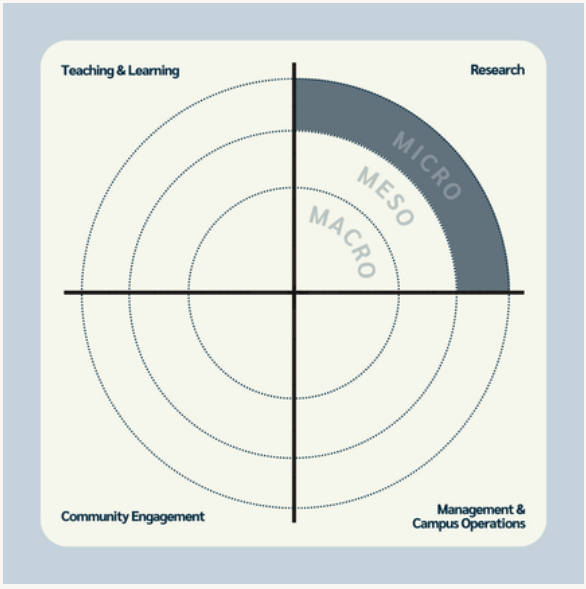
Description of the practice

This work provides an overview of the industry-university relationship in research and development (R&D) conducted within the Chilean academic context, mediated by patents as a tool for technology transfer and their capacity to promote development. To this end, a theoretical framework is presented in which the two main innovation models covered by specialized literature are compared: the linear model and the triple helix model.

Based on data collected between 2017 and 2018 from the seven universities with the highest patenting activity in Chile, it was found that the majority of interviewees have filed patents, and although there are relationships between the interviewees and industry, these patents do not originate from industry-university projects; moreover, patents are not perceived as a fundamental incentive for development. Therefore, the Chilean model of research and development (R&D) production appears to be more linear than based on the triple helix model.

Main contribution

Analysis of the relationship between patents and development in Chile.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Sciences (development of technological devices, high tech, industrial technology) and Social Sciences (patents, start-ups, knowledge transfer, university-industry-government collaboration, linear innovation model, triple helix innovation model, knowledge spillover effects).

Reference

Wong, S., & Rojas-Mora, J. (2021). La relación entre la patente y el desarrollo: Una mirada desde la I+D universitaria chilena [The relationship between the patent and development: A view from Chilean academic R&D]. *Revista Chilena de Derecho y Tecnología, 10*(2), 229-250. https://doi.org/10.5354/0719-2584.2021.58780

Sustainability challenges in the Raw Materials sector

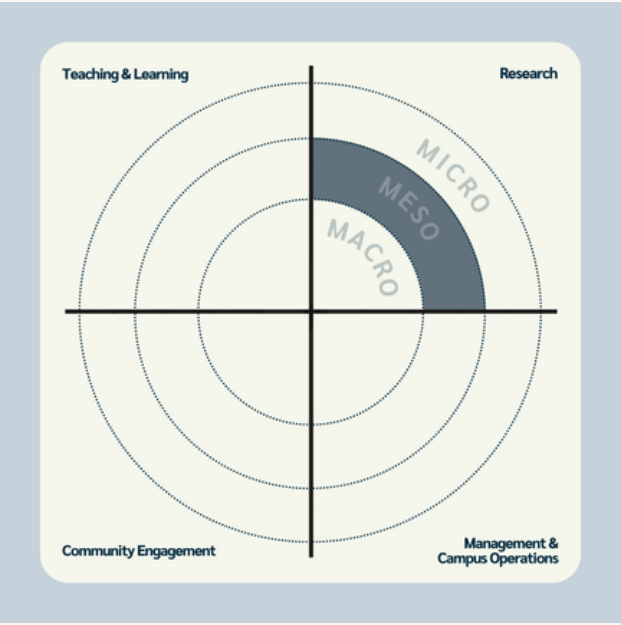
Stavros Tomazinakis, George Valakas, Anna Gaki, Dimitrios Damigos & Katerina Adam, National Technical University of Athens, Greece

Description of the practice

This study examines the raw materials (RM) sector in relation to Sustainable Development Goals (SDGs), aiming to identify and rank those most relevant according to key stakeholders—including university students, academics, industry professionals, and representatives from Greece, Poland, and Slovakia. It also assesses anticipated challenges for the sector over the next decade, based on insights from industry experts. Data from 423 participants collected through structured questionnaires were analyzed by stakeholder group and country. The results indicate that SDG 9, 8 and 7 are prioritized, underscoring their significance for the RM sector. Key challenges include recycling process optimization, digital transformation, resource efficiency in mineral processing, and supply chain management for end-of-life products.

Main contribution

Research study as part of the EIT Raw Materials project “EnAct-SDGs: Enhancing the skills of ESEE RM students towards the achievement of SDGs”.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in research.

Fields of knowledge

Sciences (raw materials, raw materials exploitation, resource assessment, industry, mining in challenging environments, mineral and metallurgical processes, infrastructure), Social Sciences (raw materials stakeholders, resource efficiency, design of products and services for the circular economy, transportation and logistics).

Reference

Tomazinakis, S.; Valakas, G.; Gaki, A.; Damigos, D.; Adam, K. The Importance and Challenges of Sustainable Development for the Raw Materials Sector: The Views of Key Stakeholders in three ESEE Countries. *Sustainability* 2022, 14, 3933. https://doi.org/10.3390/su14073933

A Framework for Climate Change Curriculum redevelopment within Built Environment degrees

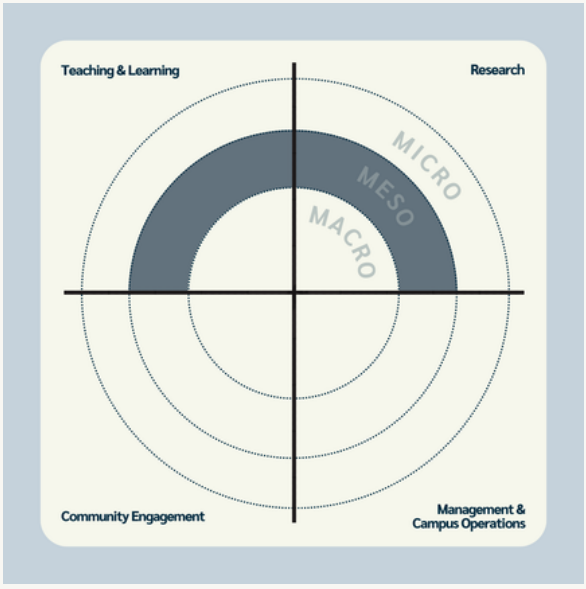
Anna Hurlimann & Jinlong Liu, University of Melbourne, and Naima Iftikhar, Western Sydney University, Australia

Description of the practice

This contribution consists in the development of a framework to guide program curriculum redevelopment to address climate change in built environment disciplines courses (at degree and master level). An initial draft of the framework was developed through a literature review comparison of curriculum development models, and then the draft was implemented in a Master of Urban Planning (MUP) program at the University of Melbourne (Australia). Throughout the process, researchers reflected on and evaluated if the curriculum produced desired changes in learners and, based on lessons learnt from the application of the program, the framework was revised and finalised.

Main contribution

This is a contribution at the micro level in research with an impact on the micro and meso levels of teaching and learning.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in research and teaching and learning (T&L), with an impact on the micro level in T&L.

Fields of knowledge

Sciences (greenhouse gas, warming, built environment), Social Sciences (greenhouse gas emission reductions, adaptation to climate change, cities, curricula of built environment degrees, curriculum development and change).

Reference

Hurlimann, A., Iftikhar, N., & Liu, J. (2024). A framework for climate change curriculum redevelopment within built environment professional degrees. Environmental Education Research. https://doi.org/10.1080/13504622.2024.2403403

Climate Change Education in semiarid and coastal regions of Mexico

Ulises Bardullas, Cesar Félix-Anaya, Ileana Espejel & Eugenio Leyva-Figueroa, University of Baja California, Mexico

Description of the practice

This initiative involved public schools, conservation NGOs, and climate research groups from Mexican regional universities. Together, they developed and implemented an interdisciplinary Climate Change (CC) education program for 112 elementary and middle school students from marginalized rural and urban communities in Ensenada, Baja California, Mexico.

The program was designed to address the educational needs of learners and was structured around five modules: Climate Watcher, Ocean Protector, Water Detective, Biodiversity Guardian, and the Photovoice Project. The program's impact was assessed through surveys and six focus groups conducted after the intervention. Results indicated significant improvements in students' hopefulness, and pro-environmental behaviors. Regarding knowledge acquisition, students gained a better understanding of the causes of climate change; however, their knowledge about its effects and adaptation strategies did not improve substantially, with many misconceptions persisting.

Main contribution

Development and implementation of an interdisciplinary Climate Change education program.

Micro - Meso - Macro Relationship

This is a contribution at the meso levels in research and in teaching and learning.

Fields of knowledge

Sciences (climate change program, semiarid and coastal regions, Humanities (hope), Social Sciences (community adaptability, resilience, active learning strategies, climate literacy, local challenges).

Reference

Ulises Bardullas, Cesar Félix-Anaya, Ileana Espejel & Eugenio Leyva-Figueroa (22 Sep 2024): Climate change education in semiarid and coastal regions of Mexico: towards an inclusive educational program, Environmental Education Research, DOI: 10.1080/13504622.2024.2403396

Storytelling to Promote Undergraduate Students' Attitudes towards Animals

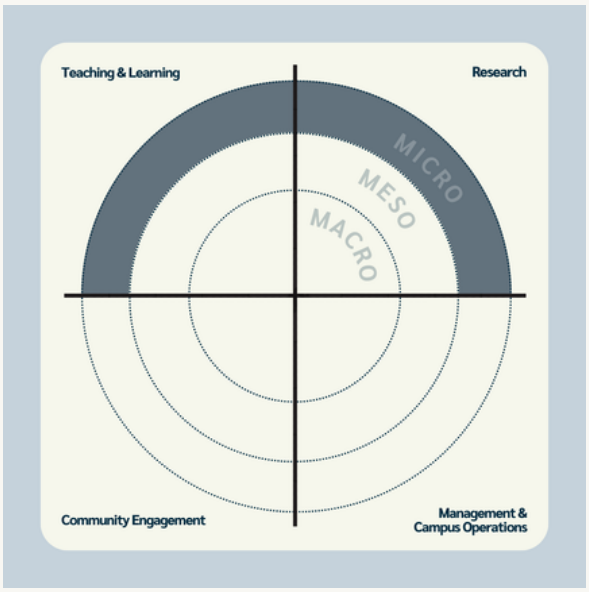
Chi-I Lin and Yuh-Yuh Li, National Sun Yat-sen University, Taiwan

Description of the practice

This contribution explores the educational impact of storytelling as a holistic pedagogical approach within an interdisciplinary classroom setting, emphasizing its role in shaping students' perceptions of humanity in relation to the nonhuman world. Engaging students as storytellers demonstrated a significant influence on their attitudes toward wild animals. Specifically, participation in storytelling activities fostered a recognition of the similarities between humans and animals, thereby suggesting the existence of an extended ethical relationship with nonhuman species and conservation awareness. The effectiveness of storytelling was found to be moderated by the choice of animal characters. Stories featuring locally relevant animals were notably more effective in cultivating a sense of kinship and ethical concern toward wild animals. Particularly when incorporating multiple perspectives, storytelling serves as a powerful pedagogical tool that stimulates imagination and empathy.

Main contribution

The use of storytelling as a pedagogical tool for developing empathy and an ethical approach towards animals.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research and teaching and learning.

Fields of knowledge

Humanities (Storytelling, multiperspective adoption), Life Sciences (human-animal relationship, wild animals), and Social Sciences (attitude towards wild animals).

Reference

Lin, C.-I., & Li, Y.-Y. (2018). Protecting Life on Land and Below Water: Using Storytelling to Promote Undergraduate Students' Attitudes toward Animals. *Sustainability, 10*(7), 2479. https://doi.org/10.3390/su10072479

One Ocean Expedition

Jarle Eid, Marianne Aanerud, and Katja Enberg, University of Bergen, Norway

Description of the practice

This case study explores educational practices and processes in an interdisciplinary summer course. During the Pacific crossing from Chile to Tahiti, 86 students from 12 countries participated in an undergraduate summer course (SDG 200 Ocean-Climate-Society) aboard the sail ship Statsraad Lehmkuhl as part of the One Ocean Expedition. The course integrated core topics such as sustainability, marine biology, behavioral science, and sail training into daily activities. Students were assigned to 18 working groups for their academic work and took on watch duties around the clock. To promote interdisciplinary dialogue on sustainability issues, active learning strategies like team-based learning and storytelling played a crucial role in engaging students. One of the main challenges was balancing the academic workload with the responsibilities of sea duties and life onboard a sailship.

Main contribution

Description of the One Ocean Expedition living lab-sailing experience.

Micro - Meso - Macro Relationship

This is a contribution at the meso level in teaching and learning.

Fields of knowledge

Humanities (Storytelling), Interdisciplinarity, Life Sciences (marine biology), and Social Sciences (safety, behavioral science, sail training, team-based learning, team readiness assurance test, global citizen education).

Reference

Eid, J., Aanerud, M. & Enberg, K. (2024). Teaching sustainability at the high sea: the “One Ocean Expedition”. *Sustainability Science 19*, 347–359. https://doi.org/10.1007/s11625-023-01419-9

University-driven Coastal Partnerships to Address Ghost Gear Pollution

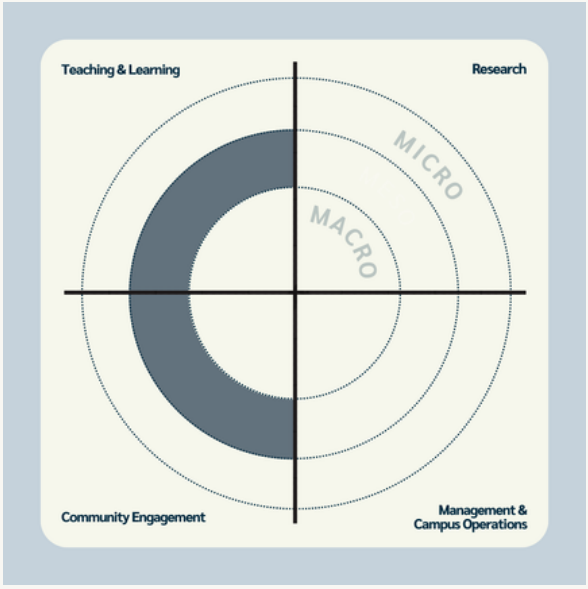
Chih-Cheng Lin, Kuo-Huan Ting, Hao-Tang Jhan, and Wen-Hong Liu, National Kaohsiung University of Science and Technology, Taiwain, Chung-Lun Liu, Feng Chia University, Taiwan, and Li-Shu Chen, National Museum of Marine Science and Technology, Taiwan

Description of the practice

This case study details the implementation of the Partnerships for Ghost Gear Cleanups & Education Project (PGGCEP), conducted by the National Kaohsiung University of Science and Technology (NKUST) in the Penghu Islands, Taiwan. The project focuses on engaging local stakeholders to prevent and remove ghost gear from the Penghu waters, thereby contributing to ocean conservation and sustainability. The conceptual framework of PGGCEP encompasses project-based learning, marine citizenship practices, and awareness campaigns aimed at fostering community involvement and environmental stewardship.

Main contribution

A framework for creating coastal partnerships in which universities have the potential to serve as anchors for sustainability and effectively drive impactful changes in the local community.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in teaching and learning, and community engagement.

Fields of knowledge

Humanities (awareness campaigns), Interdisciplinarity, Life Sciences (marine biology, ocean sustainability, coral watch), Sciences (water, ghost gear cleanup), Social Sciences (coastal partnerships, multi-stakeholders, marine citizenship practices).

Reference

Lin, C.-C., Ting, K.-H., Jhan, H.-T., Liu, C.-L., Chen, L.-S., & Liu, W.-H. (2023). University-driven coastal partnerships to address ghost gear pollution: A case study in Penghu Islands of Taiwan. *Marine Policy, 155*, 105732. https://doi.org/10.1016/j.marpol.2023.105732

Mediterran Sea Literacy

Melita Mokos, University of Zadar, Croatia, Maria Th. Cheimonopoulou, Ministry of Rural Development and Food, Greece, Panayota Koulouri, Institute of Marine Biology, Greece, Monica Previati, Underwater Bio-Cartography, Italy, Giulia Realdon, University of Camerino, Italy, Francesca Santoro, Intergovernmental Oceanic Commission of UNESCO, Athanasios Mogias, Theodora Boubonari, and Theodoros Kevrekidis, Democritus University of Thrace, Greece, Manel Gazo, Alba Tojeiro, and Carla A. Chicote, SUBMON, Spain, Alessio Satta, Mediterranean Sea and Coast Foundation, Italy,Christos Ioakeimidis and Martha Papathanassiou, Institute of Oceanography, Hellenic Centre for Marine Research, Greece

Description of the practice

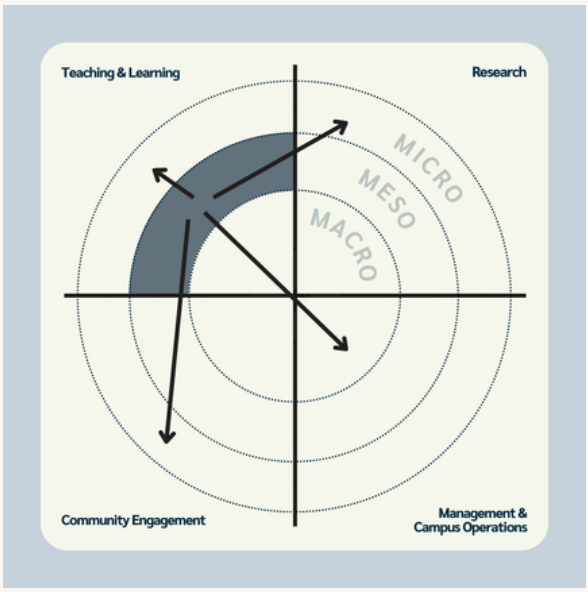
Ocean literacy refers to understanding how the ocean affects us and how we impact it. It is structured around 7 principles and 45 key concepts and is currently used globally in both formal and informal education settings. Marine experts from Europe have reinterpreted and adapted this framework for the region, creating the “Mediterranean Sea Literacy Guide.” This new tool aims to inform research, education, decision-making, and lifestyles to protect and sustainably manage the Mediterranean Sea and support a blue economy.

Main contribution

An ocean literacy framework called “Mediterranean Sea Literacy (MSL) guide”.

Micro - Meso - Macro Relationship

This is a contribution at the meso level in teaching and learning with impact at the micro level in teaching and learning, research and community engagement, and at macro level in management and campus operations.



Fields of knowledge

Humanities (mediterranean culture and history), Life Sciences (marine biology, marine ecosystems, Mediterranean sea, richness of life, biodiversity), Sciences (climate and weather, deep-sea relief, coastal lagoons), and Social Sciences (Mediterranean sea literacy, ocean literacy, sea economies).

Reference

Mokos, M., Cheimonopoulou, M. T., Koulouri, P., Previati, M., Realdon, G., Santoro, F., Mogias, A., Boubonari, T., Gazo, M., Satta, A., Ioakeimidis, C., Tojeiro, A., Chicote, C. A., Papathanassiou, M., & Kevrekidis, T. (2020). Mediterranean Sea literacy: When ocean literacy becomes region-specific. *Mediterranean Marine Science*, *21*(3), 592–598. https://doi.org/10.12681/mms.23400

Inventory of Flora from the Guilleries, Spain

Josep Gesti, University of Girona, Spain

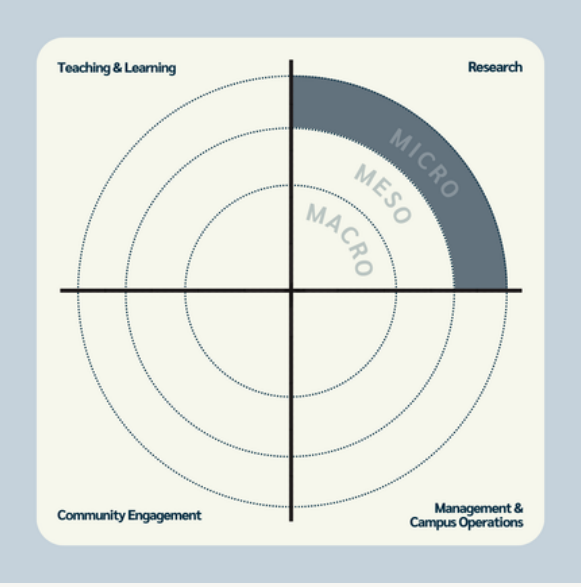
Description of the practice

Biologist Josep Gesti concluded a botanical inventory of eastern Guilleries, documenting over 1,250 plant species based on more than 45,000 observations made between November 2021 and November 2022. The study highlights a rich diversity of native and non-native species, with 284 recorded for the first time in the region. His work emphasizes the unique botanical characteristics of the area, including rare, endemic and invasive species.

This inventory enhances scientific knowledge of the region's biodiversity and provides a resource for conservation efforts and ecological management.

Main contribution

Inventory of eastern Guilleries' plant diversity, documenting over 1,250 species.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Life Sciences (plant biodiversity, botanical inventory, endemic and invasive species, ecology, and conservation).

Reference

Gesti, J. (2023). Flora de les Guilleries orientals. Catàleg, caracterització i espècies singulars. Càtedra de l'Aigua, Natura i Benestar - Eumo. ISBN: 978-84-9766-811-8

SDGs, Forestry and Wood Science

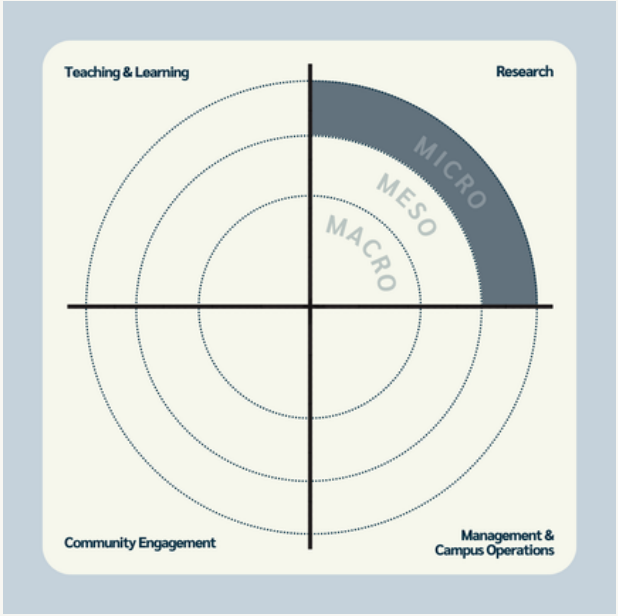
Zala Uhan, Spela Pezdevšek Malovrh, Matej Jošt & Katarina Remic, University of Ljubljana, Slovenia

Description of the practice

This study investigated how familiar university teachers and students are with SDGs and whether they consider them important for the forestry and wood industry. The survey was responded to by 61 teachers and 185 students from the Biotechnical Faculty, Department of Forestry and Renewable Forest Resources and Department of Wood Science and Technology of the University of Ljubljana (Slovenia). The results show that all the respondents are familiar with the SDGs and find them important for the forestry and wood industry. All the participants especially emphasized SDG 15, Life on land. The results also showed that university teachers already have embedded some SDGs in their courses (42% academic programmes from the Department of Wood Science, and 23% of professional study programmes from the Dept. of Forestry) and they plan to integrate them more in the future.

Main contribution

Research study about university teachers and students' knowledge and opinions about the SDGs.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Life Sciences (forestry, wood science, wood industry, renewable forest resources) and Social Sciences (curriculum reorientation, students' knowledge, national legislation).

Reference

Uhan, Z., Pezdevšek Malovrh, S., Jošt, M. & Remic, K. (2023) Integration of Sustainable Development Goals in Higher Education and research processes related to forestry and wood science, *Drvna Industrija*, *75* (1) 87-98, https://doi.org/10.5552/drvind.2024.0120

Citizen Science and Green Spaces in Ghana

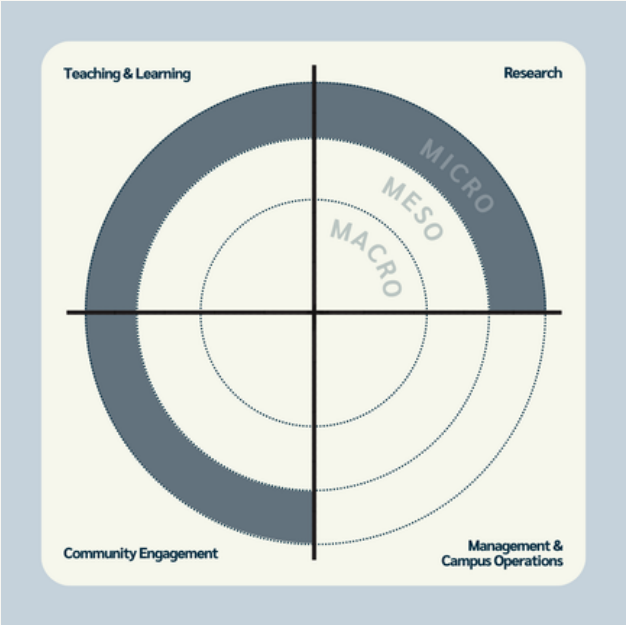
Frederick Gyasi Damptey, University of Technology Cottbus-Senftenberg, Germany, Nana Yeboaa Opuni-Frimpong, University of Energy and Natural Resources, Ghana and Abdul Wahid Arimiyaw, Kwame Nkrumah University of Science and Technology, Ghana.

Description of the practice

This contribution examined the levels of biodiversity and the proxy-based potential for ecosystem services within urban green spaces in Sunyani, Ghana, utilizing citizen science approaches. Data collection was conducted by direct field sampling to assess biodiversity and the ecosystem service potential of the green spaces through proxy indicators and an indirect perception survey designed to capture participants' perceptions of the ecosystem services they believed could be derived from urban green spaces. The results demonstrate that, leveraging their indigenous knowledge and experiential insights, citizen scientists were capable of collecting meaningful biodiversity and ecological data. Furthermore, their awareness of environmental conditions was evident as they articulated examples illustrating the benefits of nature, ecosystem service provision, and existing threats to local ecosystems

Main contribution

Study of the levels of biodiversity and the proxy-based ecosystem service potential of urban green spaces in Sunyani, Ghana.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research, community engagement and teaching and learning.

Fields of knowledge

Life Sciences (biodiversity, biodiversity assessment), Sciences (ecosystem service provision), and Social Sciences (citizen science, urban green spaces, people's perceptions of green spaces).

Reference

Damptey, F.G.; Opuni-Frimpong, N.Y.; Arimiyaw, A.W.; Bentsi-Enchill, F.; Wiafe, E.D.; Abeyie, B.B.; Mensah, M.K.; Debrah, D.K.; Yeboah, A.O.; Opuni-Frimpong, E. (2022) Citizen Science Approach for Assessing the Biodiversity and Ecosystem Service Potential of Urban Green Spaces in Ghana. *Land*, 11,1774. https://doi.org/10.3390/land11101774

The Contribution of the University of British Columbia Botanical Garden (UBCBG) to the SDGs

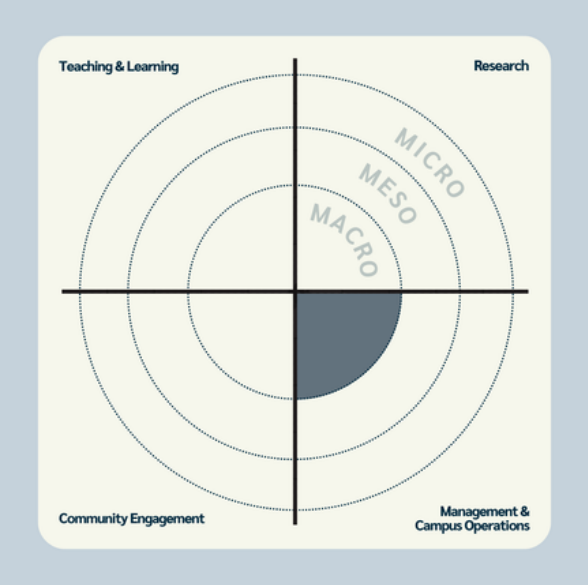
Adriana Lopez-Villalobos, Dionne Bunsha, Delanie Austin, Laura Caddy, Jennifer Douglas, Andy Hill, Kevin Kubeck, Patrick Lewis, Ben Stormes, Ryo Sugiyama, and Tara Moreau, University of British Columbia (Vancouver), Canada

Description of the practice

UBCBG aligns its efforts with 12 of the 17 UN SDGs, implementing 32 activities that target 24 of the 169 SDG indicators. Of particular relevance is Goal 15, which addresses five specific targets related to botanical garden conservation initiatives. UBCBG's living collections encompass over 5,000 taxa across 200 plant families globally, supported by international collaborations focused on plant conservation and collection management. The Alpine Garden functions as an educational platform highlighting the vulnerability of alpine ecosystems; Additionally, the food garden demonstrates UBCBG's commitment to local food security through the cultivation of diverse edible species, while also conserving crop wild relatives and plants significant to Indigenous communities.

Main contribution

Assessment of the contribution of the University of British Columbia Botanical Garden to the SDGs.



Micro - Meso - Macro Relationship

This is a contribution at the macro level in management and campus operations.

Fields of knowledge

Humanities (indigenous communities), Life Sciences (biodiversity, botanical garden, horticulture, metacollections), Sciences (restorage of degraded lands), and Social Sciences (biodiversity benchmarking and conservation).

Reference

Lopez-Villalobos, A.; Bunsha, D.; Austin, D.; Caddy, L.; Douglas, J.; Hill, A.; Kubeck, K.; Lewis, P.; Stormes, B.; Sugiyama, R.; et al. (2022) Aligning to the UN Sustainable Development Goals: Assessing Contributions of UBC Botanical Garden. *Sustainability*, 14, 6275. https://doi.org/10.3390/su14106275

Guilleries Research Award
University of Girona, Spain

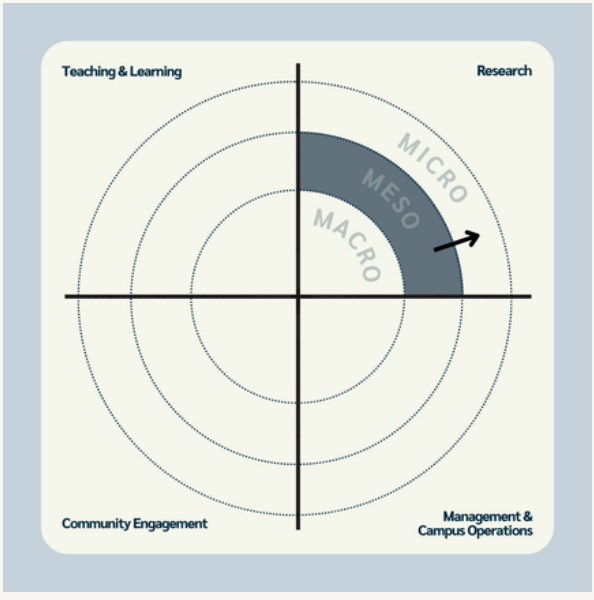
Water, Nature, and Well-being Chair; University Girona, Spain

Description of the practice

The Guilleries Research Award, organized by the Water, Nature, and Well-being Chair of the University of Girona, offers a €5,000 grant for the best research project on the natural heritage of the Guilleries, a mountain system located at the apex of the Catalan Transversal Range and the Pre-Coastal Range. The award focuses on water, biodiversity and the territory, and fosters environmental research and knowledge sharing, with a public presentation of the findings, which supports the conservation of the Guilleries National Area.

Main contribution

Creation of a research award that promotes environmental research and conservation and shares knowledge and public engagement by funding studies on the natural heritage of the Guilleries.



Micro - Meso - Macro Relationship

This is a contribution at meso level in research with direct impact on the micro level in research.

Fields of knowledge

Life Sciences (biodiversity), Sciences (ecological studies, environmental conservation), and Social Sciences (human interaction with the landscape, conservation policies, award-social recognition).

Reference

Càtedra de l'Aigua, Natura i Benestar. (July 25, 2024). Convocat el VI Premi de Recerca Guilleries, 2024. https://www.catedraaigua.cat/convocat-el-vi-premi-de-recerca-guilleries-2024/

Curriculum Audits and Implications for Integrating SDGs in Business Schools

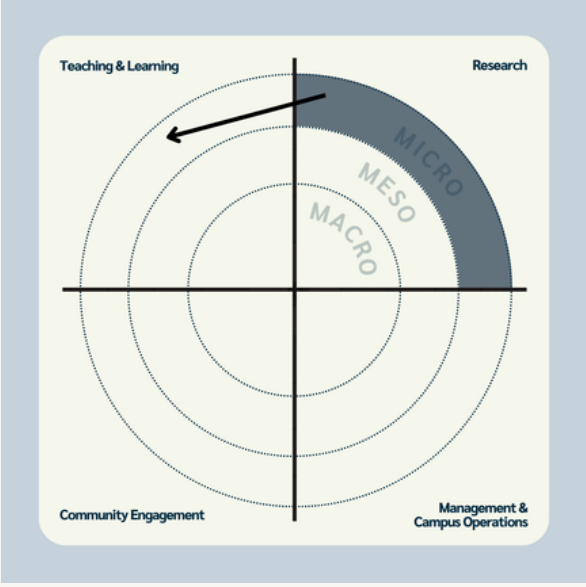
Rob Hale, Griffith University, Australia and Giang Phi, Aalborg University, Denmark

Description of the practice

This contribution presents a case study of curriculum mapping of the Sustainable Development Goals (SDGs) within the Griffith Business School courses. Authors propose a conscious systematic approach supported by audits and follow-up community of practice sessions to gather staff feedback on audit findings. Based on these insights, they propose a Curriculum Consideration Guide for the SDGs designed to facilitate curriculum development aligned with sustainability and global leadership values.The guide outlines seven strategies for deeper engagement, contributing notably to key concepts associated with SDG 16, such as accountable institutions, anti-corruption measures, justice/injustice, peace, rule of law, security, and violence prevention.

Main contribution

Case study of curriculum mapping of SDGs in a Business school.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research with an impact in teaching at micro level.

Fields of knowledge

Social Sciences (business studies, integration of SDGs in business degree courses, social responsibility, accountable institution, SDGs audits, curriculum mapping, curriculum guide for SDGs integration, global leadership values, rule of law, justice, corruption, security)

Reference

Hales, R. and Phi, G. (2021). Curriculum audits and implications for sustainable development goals integration in business schools. *Journal of Business Ethics Education, 18*, 25-46. https://www.neilsonjournals.com/JBEE/abstractjbee18halesphi.html

Law Professionals and Academics Together in the Design and Implementation of an Ethics Program

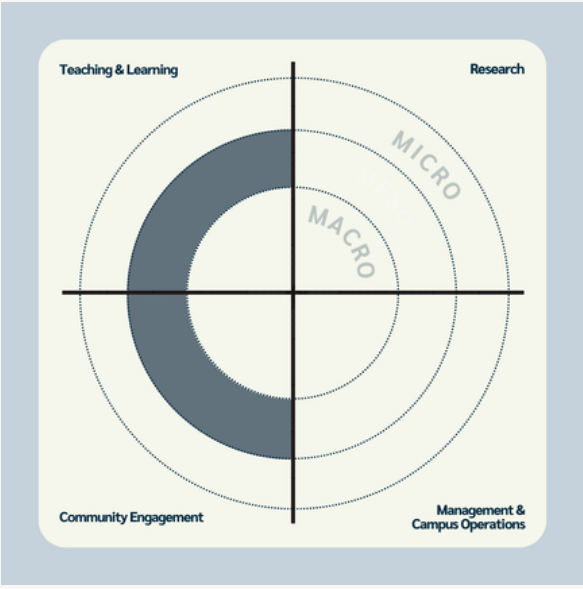
Yurixhi Gallardo and Alexa Guadalupe Torres Romero, Panameriacana University, México

Description of the practice

This contribution presents a collaborative experience between a law professionals' association and academics from a higher education institution in western Mexico. It details the design and implementation of a program aimed at teaching professional ethics to undergraduate law students, contributing to the achievement of SDG 16 (Peace, Justice, and Strong Institutions) and SDG 4 (Quality Education). The methodology employed involved addressing ethical dilemmas through practical case studies drawn from professionals' real-world experiences. This program was developed to train both faculty members and students in professional ethics, fostering ethical awareness and responsible practice within the legal field.

Main contribution

Design of a course in professional ethics.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in community engagement and teaching and learning.

Fields of knowledge

Social Sciences (law professionals, practical ethics, ethical dilemmas, law degree curricula, teaching of professional ethics).

Reference

Gallardo, Y. & Torres Romero, A. G. (2021). Colaboración en un programa de ética profesional entre un colegio de profesionistas y una universidad: una experiencia en México. *Revista de Educación y Derecho, Número extraordinario, Oct. 2021*, 333-352 https://raco.cat/index.php/RED/article/view/395751

Higher Education and SDG 16 in Fragile and Conflict-Affected Contexts

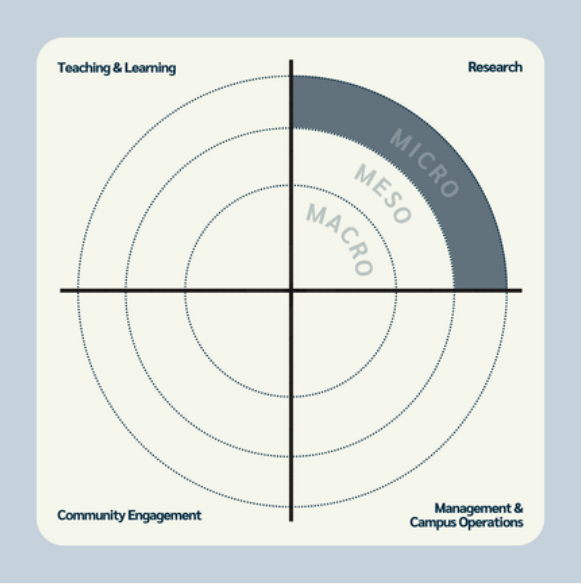
Sansom Milton, Arab Center for Research and Policy Studies, Qatar

Description of the practice

This study explores the role of higher education in advancing or hindering SDG16, focusing on aspects such as teaching, research, governance, and external leadership. It examines four key factors that shape university agency in fragile and conflict-affected contexts regarding SDG16: the mobilization of resources and the promotion of the public good; issues related to securitization; challenges surrounding academic freedom, insecurity, and politicization; and the conflicts between local efforts and the universal principles embedded in liberal peacebuilding frameworks.

Main contribution

Desk-based research of both academic and policy literature relating SDG 16.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Social Sciences (university agency, academic freedom, conflict-affected contexts, insecurity, public good, peacebuilding frameworks).

Reference

Milton, S. (2021). Higher education and sustainable development goal 16 in fragile and conflict-affected contexts. *Higher Education 81*, 89-108, https://doi.org/10.1007/s10734-020-00617-z

A Holistic Islam-Based Academic Integrity Model for Malaysian HEIs

Wan Mohd Khairul Firdaus Wan Khairuldin, et al, Sultan Zainal Abidin University, Malaysia

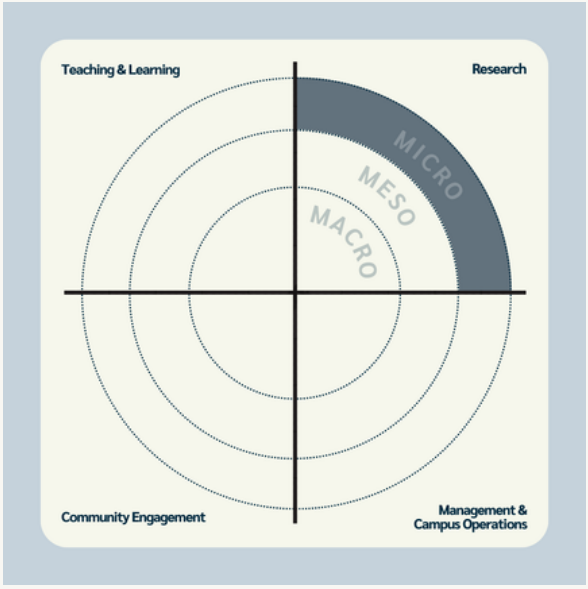
Description of the practice

Despite ongoing efforts by the Malaysian government to enhance the integrity of public higher education personnel, issues related to academic integrity and administrative inefficiencies continue to be prevalent, particularly among academics who occupy central roles within the educational hierarchy. Manifestations of these challenges include declining disciplinary standards, ethical violations in authorship, supervision concerns, and difficulties in teaching and learning processes.

This contribution proposes a comprehensive, Islam-based model of academic integrity as an augmentation to existing guidelines. The model draws upon the ethical principles articulated by both classical and contemporary Islamic scholars in areas such as research conduct, pedagogical practices, and institutional management. It is anticipated that this approach will significantly strengthen academic integrity in Malaysia and provide a solid foundation for future policy development, aligning with SDG 16 and fostering a culture of integrity within the higher education sector.

Main contribution

A holistic Islam-based academic integrity model.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Social Sciences (academic integrity, integrity guidelines, islamic scholars, ethical issues).

Reference

Khairuldin,W.M.K.F.W. , Anas, W. N. I. W. N., Embong, A. H., Hassan, S. A., Suhaimi, M. A., & Idham, M. A. (2024). Model Holistik Integriti Akademik Berteraskan Islam bagi Institusi Pengajian Tinggi di Malaysia : A Holistic Islamic-Based Academic Integrity Model for Higher Education Institutions in Malaysia. *Global Journal Al-Thaqafah, Dec. 2024 Special Issue*, 193-207. https://doi.org/10.7187/GJATSI122024-13

Aligning Community Outreach Initiatives with SDGs

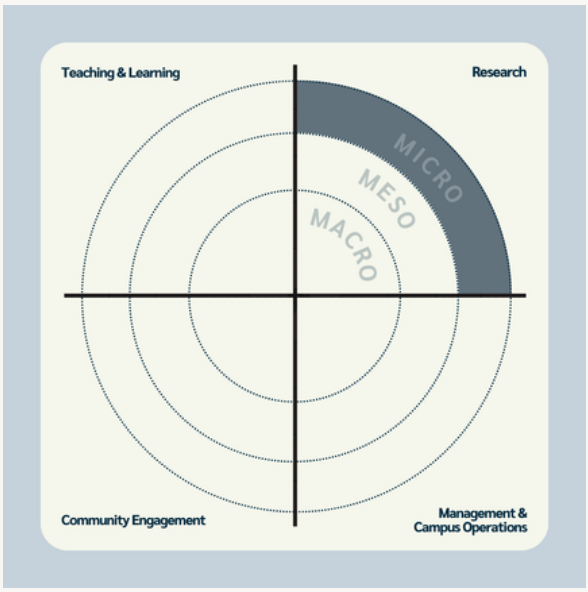
Jaluza Maria Lima Silva Borsatto, Carla Bonato Marcolin, Etienne Cardoso Abdalla & Fabiola Dutra Amaral, Federal University of Uberlandia, Brazil

Description of the practice

Community outreach aims to foster a dialogical relationship between universities and society, emphasizing the exchange and sharing of knowledge through actions involving community members. This study examines how the outreach activities of a Higher Education Institution (HEI) in Brazil align with the Sustainable Development Goals (SDGs). The research is based on documentary analysis utilizing an artificial intelligence tool that analyzed over 15,000 community outreach projects conducted from 2009 to 2022, employing natural language processing (NLP). The findings indicate that the primary SDGs addressed through these outreach efforts are SDG 17: Partnerships for the Goals; SDG 4: Quality Education; SDG 12: Responsible Consumption and Production; and SDG 8: Decent Work and Economic Growth.

Main contribution

Research study about the impact of university-community projects.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Sciences (technology, artificial intelligence, natural language processing) and Social Sciences (partnerships, community outreach projects).

Reference

Silva Borsatto, J.M, Bonato Marcolin, C., Cardoso, E. & Dutra Amaral, F. (2023). Aligning community outreach initiatives with SDGs in a higher education institution with artificial intelligence. *Cleaner and Responsible Consumption, 12*(100160), https://doi.org/10.1016/j.clrc.2023.100160

Achievement of SDG 17 through Community-University Engagement

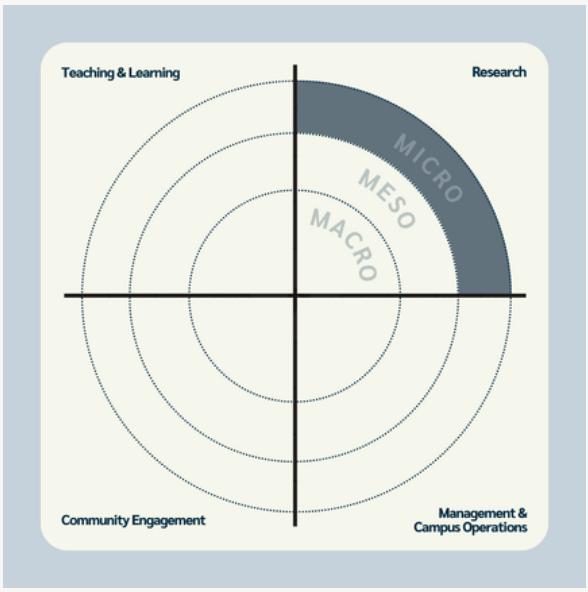
Purva Bhatt & Manju Singh, Malaviya National Institute of Technology Jaipur, Rajasthan

Description of the practice

The interconnected, interrelated, and transdisciplinary nature of the technological revolution within Industry 4.0 necessitates multi-stakeholder and transdisciplinary collaborations among various institutions, agencies, and civil society. In this contribution, the authors present a conceptual framework aimed at enhancing the sustainability of Industry 4.0. They highlight the role of technological institutes of higher education as catalysts for fostering partnerships with industry and the community, working towards shared goals that can generate mutually beneficial outcomes for all stakeholders.

Main contribution

Conceptual framework for encouraging effective partnerships between academia, industry 4.0 and community for sustainability.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Sciences (sustainable technologies and industry 4.0) and Social Sciences (domain theory, multi-stakeholder partnerships, community engagement, Knowledge co-creation).

Reference

Bhatt, P. & Singh, M., (2023) Industry 4.0 and sustainability. Leveraging community engagement for achieving partnership for common goals. *EVERGREEN Joint Journal of Novel Carbon Resource Sciences & Green Asia Strategy, 10*(04), 2483-2489, https://doi.org/10.5109/7162011

Rethinking Higher Education Institutions' Partnerships across Sectors

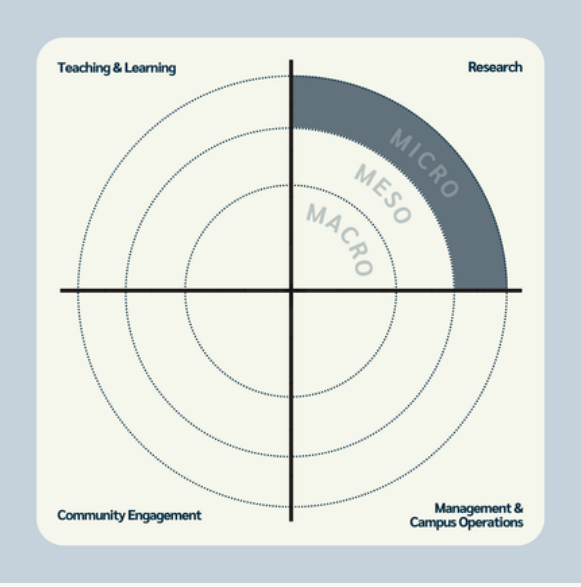
Christian Hauser, University of Applied Sciences of the Grisons (Chur), Switzerland and Annmarie Ryan, University of Limerick, Ireland

Description of the practice

This contribution proposes a three-dimensional framework designed to map cross-sector partnerships within higher education institutions (HEIs), and to analyze their current modes of engagement with actors from different sectors. The three dimensions of the framework are: locus of outcomes and the two types of commitment (material and affective). Instead of applying a "one size fits all" approach, it offers typologies of benefits to better capture the diverse outcomes that can arise from these collaborations. A central component of the framework is its differentiation between types of commitment. It distinguishes between material commitment, which includes financial investments made by HEIs -such as personnel time and infrastructure- and affective commitment, which pertains to the emotional engagement and dedication of executive leaders and university staff.

Main contribution

A three-dimensional framework to map university-community partnerships.



Micro - Meso - Macro Relationship

This is a contribution at the micro level in research.

Fields of knowledge

Social Sciences (cross-sectoral partnerships, engagement benefits and outcomes, material and affective commitment, partnerships mapping and classification).

Reference

Hauser, C. and Ryan, A. (2021). Higher education institutions, PRME and partnerships for the goals: retrofit labeling or driving force for change?. *Sustainability Accounting, Management and Policy Journal*, *12*(6), 1268-1288. https://doi.org/10.1108/SAMPJ-03-2020-0069

Academics' Experiences with North/South Partnerships

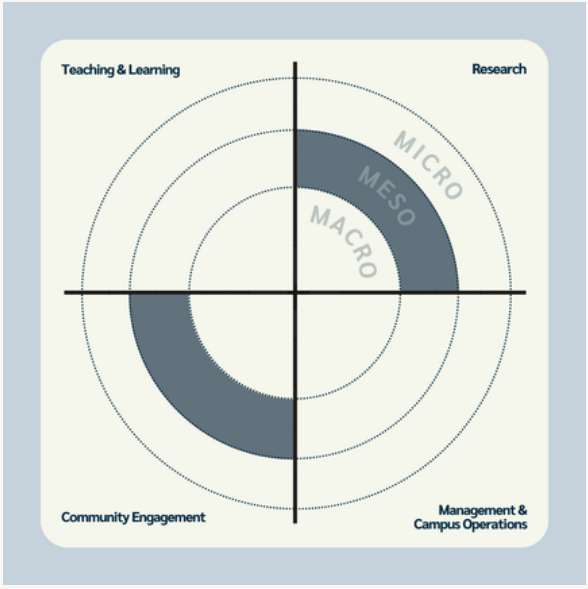
Isabel Craveiro, Antonio Carvalho and Paulo Ferrinho, Nova University of Lisbon, Portugal

Description of the practice

The University Development and Innovation - Africa project (UDI-A) was designed to train lecturers and administrative staff of Angolan and Mozambican Universities through collaborations with European institutions. Its goal was to enhance the quality and innovation of education, research and service of African universities by updating knowledge and skills of staff, as well as supporting institutional engagement with relevant stakeholders. The project also conducted research on how some Angolan and Mozambican health sciences participants experienced this international collaboration. Findings revealed tensions arising from different imaginaries of capacity-building and partnerships, highlighted existing asymmetries between Europe and Africa, and explored participants' expectations, positive impacts, and challenges and failures encountered.

Main contribution

Qualitative study of a North/South partnership.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in research and community engagement.

Fields of knowledge

Humanities (North/South imaginaries), Life Sciences (African health academics visions), and Social Sciences (North/South partnerships, international exchange, and cooperation, capacity building).

Reference

Craveiro, I. et al. (2020). "Get us partnerships!". A qualitative study of Angolan and Mozambican health academics' experiences with North/South partnerships. *Globalization and Health 16*(33) https://doi.org/10.1186/s12992-020-00562-7

The University of Rijeka SDG Portal

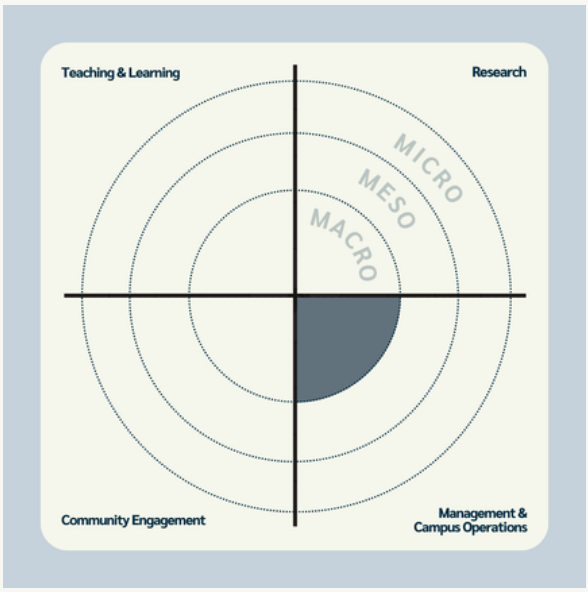
University of Rijeka, Croatia

Description of the practice

The University of Rijeka (Croatia) launched a portal on its website in 2021 to showcase its commitment to Agenda 2030 and the Sustainable Development Goals (SDGs). The portal highlights individual actions by some university academics that contribute to specific SDGs. Starting with the premise that individual activities contribute to several different goals and not just one, it can be concluded that the activities of the University of Rijeka efforts, along with those of its members, make a multifaceted contribution to achieving SDGs and enhancing societal well-being.

Main contribution

Creation of a website that showcases all university contributions to the SDGs.



Micro - Meso - Macro Relationship

This is a contribution at the macro level in management and campus operations.

Fields of knowledge

Interdisciplinar

Reference

University of Rijeka. (January 15, 2022). *About University: Sustainable Development Goals (SDG).* https://uniri.hr/en/about-university/sustainable-development-goals/

ImpSDGup Course on Sustainable Development Skills for Higher Education Teachers

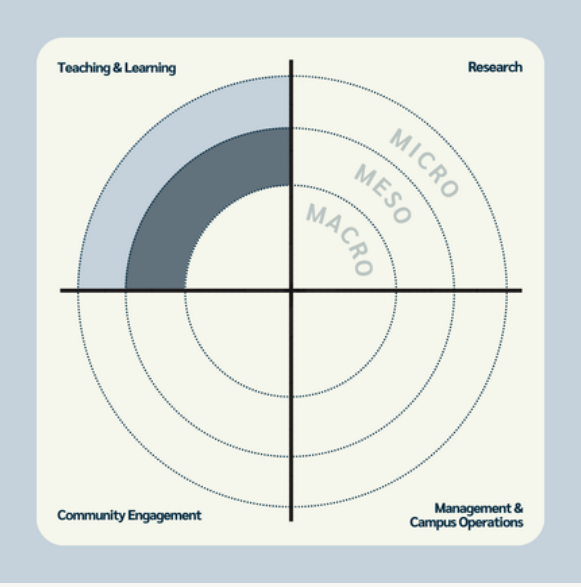
Leslie Mahe Collazo Expósito and Jesús Granados Sánchez, University of Girona, Spain

Description of the practice

The University Jaume I of Castellón (Spain) launched the "ImpSDGup" course in 2017, aimed at training higher education teachers in sustainable development (ESD) skills to help them realign their curricula with the UN's Agenda 2030 goals. Based on the Transformative Action for Sustainability (TMTAS) model -covering sustainability content, theoretical approaches, and ESD teaching methodologies- the course equips educators to integrate SDGs into their teaching. The impact of the course was evaluated using content analysis, and results show that out of 55 teachers across three editions, most successfully revised their course objectives and incorporated SDGs and active learning methods. Overall, the course enhances university teachers' ESD competencies.

Main contribution

Development of a training course for university academics based on the Training Model in Transformative Action for Sustainability (TMTAS).



Micro - Meso - Macro Relationship

This is a contribution at the meso level with an impact on the micro level of teaching and learning.

Fields of knowledge

Social Sciences (sustainable curricula, transformative action for sustainability).

Reference

Collazo Expósito, L. M. & Granados-Sánchez, J. (2020). Implementation of SDGs in University Teaching: A Course for Professional Development of Teachers in Education for Sustainability for a Transformative Action. *Sustainability 2020, 12*(19), 8267. https://doi.org/10.3390/su12198267

Teaching Innovation Network for the Inclusion of the SDGs in Teaching

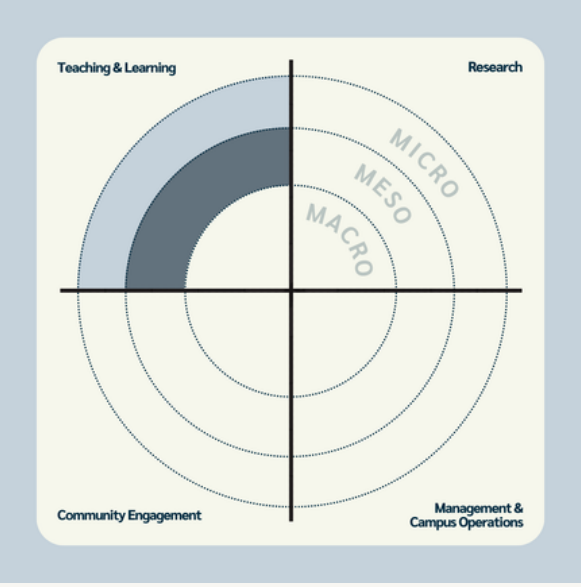
Jesús Granados-Sánchez and Leslie Mahe Collazo, University of Girona, Spain

Description of the practice

The Teaching Innovation Network for the Inclusion of the SDGs in Teaching is an initiative created by the Institute of Education Sciences of the University of Girona. The network is made up of 18 academics from different scientific fields who teach in different undergraduate and master's programs at the university. They meet periodically to share experiences related to the inclusion of different SDGs in the courses they teach. The network is currently working on the publication of a collection of good teaching practices of the network members.

Main contribution

Network for the exchange of innovative teaching practices related to the SDGs.



Micro - Meso - Macro Relationship

This is a contribution at the meso level with an impact on the micro level of teaching and learning.

Fields of knowledge

Social Sciences (sustainable curricula, Inclusion of SDGs in Higer Education courses, teaching approaches).

Reference

Institut de Ciències de l'Educación Josep Pallach (ICE) - Universitat de Girona. (February 14, 2017). *ODS en la Docència: Xarxa d'Innovació Docent*. https://www.udg.edu/ca/ice/innovacio-docent/xarxes-dinnovacio-docent/xid-ods-en-la-docencia

Sustainability Initiative of the Carnegie Mellon University

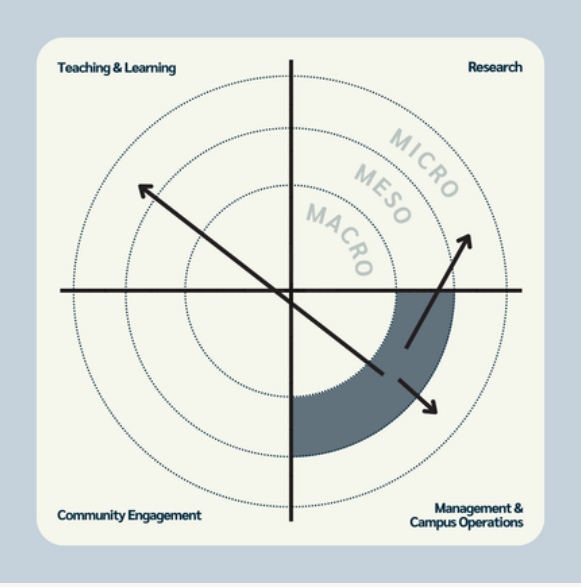
Alexandra Hiniker, Carnegie Mellon University, United States of America

Description of the practice

Carnegie Mellon University's Sustainability Initiative, launched in 2019, integrates the UN's SDGs into the university's educational framework, research activities, and operational practices. Led by Director Alexandra Hiniker, the proposal has introduced several impactful projects: In 2020, Carnegie Mellon became the first university worldwide to publish a Voluntary University Review (VUR), setting a benchmark for higher education institutions by evaluating and publicly sharing its contributions to the SDGs; in 2022, the university opened the Sustainability Studio in Hunt Library as a hub for students, students, faculty, and staff to work on sustainability-related projects and discussions; and finally, in 2023, three working groups focused on sustainability across the university campus were created, and an internship program for students' hands-on experience with sustainability projects was established.

Main contribution

Integration and promotion of the SDGs into HE by fostering interdisciplinary research, hands-on student engagement, and institutional transparency through the Voluntary University Review.



Micro - Meso - Macro Relationship

This is a meso contribution at meso level in management and campus operations, with implications to the micro level in research, teaching and learning, and in management and campus operations.

Fields of knowledge

Humanities (interdisciplinary education, equity, and programming), Sciences (data analysis, engineering, and climate action strategies), and Social Sciences (policy, engagement metrics, and sustainable development frameworks).

Reference

Carnegie Mellie University. (March 15, 2024). *Sustainability Initiative at CMU.* https://www.cmu.edu/sustainability-initiative/about/index.html

SDG Toolkit for Teaching and Learning

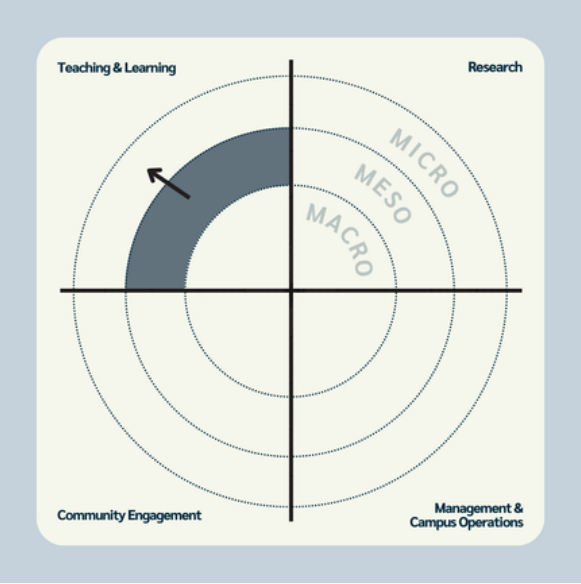
Jean Kennedy, University College Dublin, Ireland

Description of the practice

The SDG Toolkit, developed by University college Cork (UCC), is a comprehensive resource designed to assist educators in integrating the Sustainable Development Goals into their teaching and research. Through this toolkit, the initiative aims to enhance sustainability awareness and education across a range of academic disciplines, enhancing awareness and understanding of global sustainability challenges. Key features of the toolkit include SDG mapping tools that allow educators to align their curriculum and research with specific SDGs, creating clear connections between academic content and sustainability objectives, and offering a comprehensive bank library.

Main contribution

SDG Toolkit with different resources for higher education teachers.



Micro - Meso - Macro Relationship

This is a contribution at the meso level in teaching and learning with an impact on the micro level of teaching and learning.

Fields of knowledge

Social Sciences (education, curriculum development, education toolkit, teaching guidelines).

Reference

University College Cork. (October 31, 2024). *Teaching and Learning for Sustainability.* https://www.ucc.ie/en/sdg-toolkit/

Sustainability in the Mining Industry

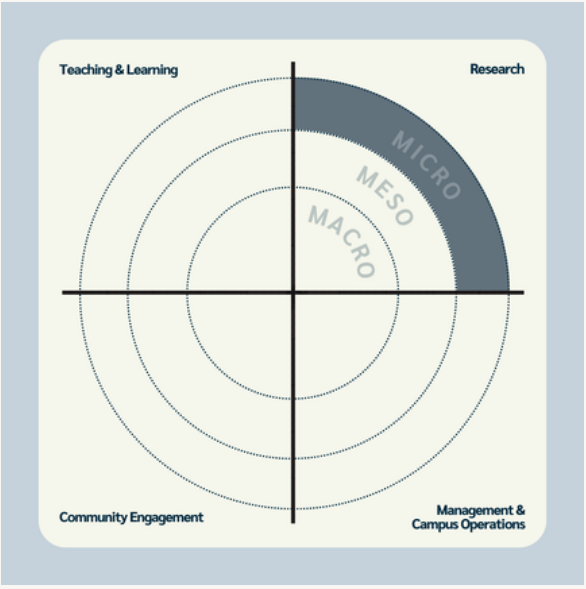
Nathalie Barbosa Reis Monteiro, Elaine Aparecida da Silva, José Machado Moita Neto, Universidade Federal do Piauí, Brazil.

Description of the practice

Barbosa Reis Monteiro, Aparecida da Silva and Machado Moita Neto developed a study to align mining activities with the 17 Sustainable Development Goals (SDGs) through systematic literature review and field observations. After having visited crushed stone mining industries in Brazil, the researchers compared the literature with their field observations and provided a description of key contributions of mining to each SDG and, at the same time, they identified elements of this economic activity that need to be addressed and changed. For example, mining is contributing to the reduction of poverty (SDG1) but needs to address social inequalities in this industry, especially gender equality (SDG5).

Main contribution

Accurate description of contributions and areas of action to each SDG in the mining industry.



Micro - Meso - Macro Relationship

This is a contribution at micro level in research.

Fields of knowledge

Sciences (mining operations, environmental impact) and Social Sciences (addressing social inequalities and economic development).

Reference

Monteiro, N. B. R., da Silva, E. A., & Neto, J. M. M. (2019). Sustainable development goals in mining. *Journal of Cleaner Production, 228*, 509-520. https://doi.org/10.1016/j.jclepro.2019.04.332

Sustainability in Law Teaching Conference

Albert Rueda González and Albert Lladó Martínez, University of Girona, Spain

Description of the practice

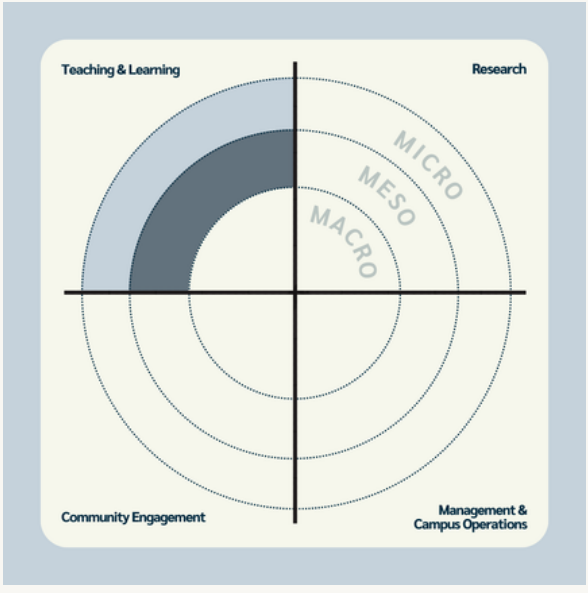
The Dean of the Faculty of Law at the University of Girona (Spain) has organized an annual conference aimed at rethinking law education within the framework of the Sustainable Development Goals (SDGs). The conference seeks to foster a critical debate around key questions such as:

- Are our institutions, programs, and teaching methods aligned with sustainable education and the SDGs?
- How does sustainability influence the content we deliver in Law courses?
- In what ways can we integrate the SDGs into our teaching practices?

Law professors from various Spanish universities participated in the conference, sharing their experiences with innovative learning activities and reflections on how to advance this important agenda. Their communications are published in a book.

Main contribution

Organization of a conference and edition of a book about good practices in Law education and the SDGs.



Micro - Meso - Macro Relationship

This is a contribution at the meso level with an impact on the micro level in teaching and learning.

Fields of knowledge

Social Sciences (sustainability and legal frameworks, Law teaching).

Reference

Ruda González, A., & Lladó Martínez, A. (Coords.). (2024). *Los objetivos del desarrollo sostenible (ODS) en la docencia, la investigación y el mundo profesional* (1ª ed.). Colex. https://www.dykinson.com/libros/sostenibilidad-en-el-derecho/9788411943215/