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Curricular Mapping for Societal Impact: A Strategic Framework for Curriculum Design

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"A curriculum map is exactly that – a map. And maps should inspire possibilities rather than limit options."

- JOHN SPENCER

Universities and revolutions

The academic revolutions and redefinition of the mission of universities

First revolution - 19th century - research function of universities.

Second revolution 20 th century entrepreneurial/ economic development function

Third revolution 21 th century Sustainability function

Fourth revolution 21 th century Internationalisation function

Universitites and societal impact

❖ Higher Education Institutions are recognized as significant actors in promoting sustainable development and entrepreneurial activities. Universities create and spread knowledge, provide support for technological progress and for starting a business (Feola, Parente, and Cucino, 2021).

❖ Scholars emphasize that entrepreneurial universities differ from business schools by focusing not on commercial achievements but rather on solving social problems and putting innovations into practice (Thorp and Goldstein, 2013)

❖ Universities are expected to generate technological innovation and new knowledge, which can be applied by industries and society (Klein and Pereira, 2021).

❖Universities influence sustainable entrepreneurship through their support (Waris et al., 2022) and encourage young people - future leaders, to contribute to sustainable development goals (Tomasella, Wylie, and Gill, 2022).

Universities and sustainable development (I)

❖the inclusion of Sustainable Development Goals (SDGs) in teaching and research programs,

❖the concepts of sustainable and green university,

❖sustainability ranking systems and declarations on which sustainable HEIs are based.

Universities and sustainable development (II)

Paletta et al. (2019) classified seven key features for Sustainable University based on the literature analysis:

(1) *The institutional framework* includes mission, vision, strategic planning, and policy;

(2) *Research* creates the knowledge needed to stimulate changes in society;

(3) *Education* incorporates teaching and learning of the principles of sustainable development through courses and programs to increase knowledge and awareness about a sustainable future;

(4) *Campus operations* involve energy use, greenhouse gases, waste, water management, procurement, transport, accessibility and equality. ([UPG Ploiesti a prezentat studentilor si elevilor de la Liceul Elie Radu avantajele unui proiect de eficienta energetica implementat in Universitate – Constructii SMART](#))

(5) *Outreach and collaboration* encompass joint degrees, exchange programs, research partnerships and dialogue with the community.

(6) *Sustainable Development through on-campus experiences* covers policies and practices for personnel and students regarding sustainability principles.

(7) *Assessment and reporting* measure progress and share sustainability results and achievement, participate in university sustainability rankings.
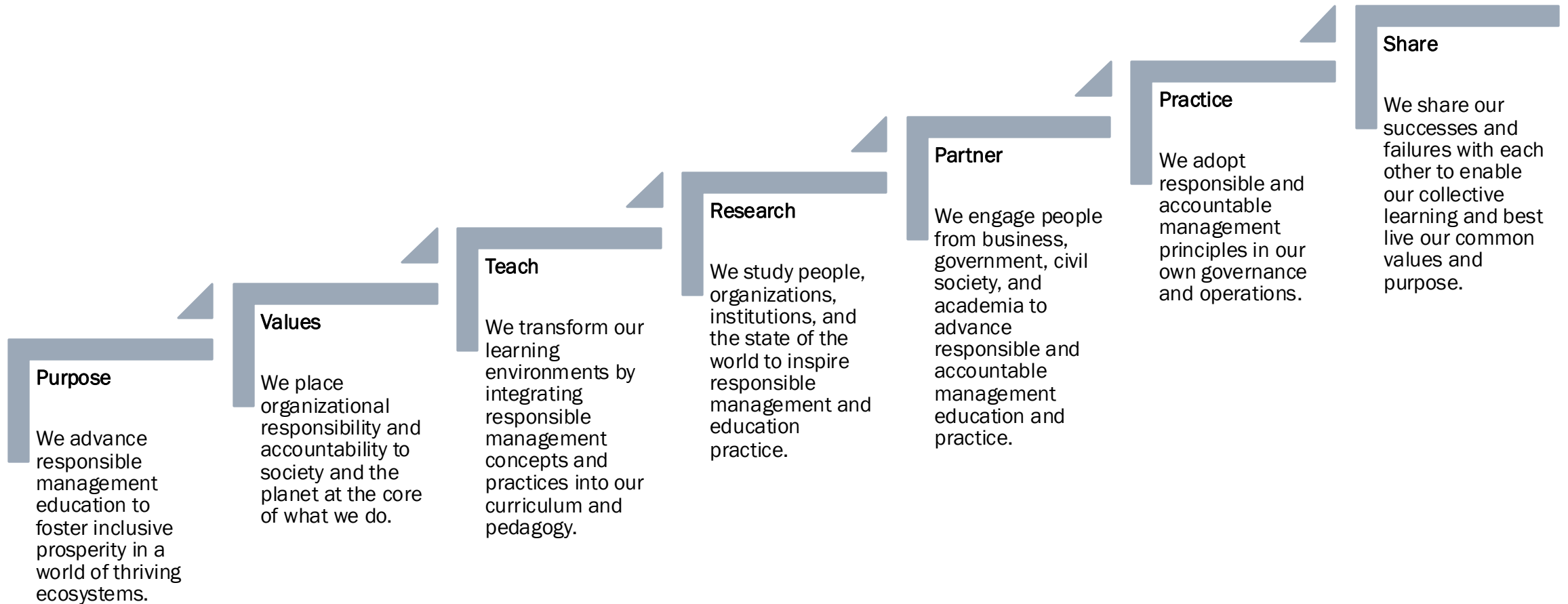
Universities and sustainable development (III)

Given the specifics of the activities carried out, academic organizations have created various entities as forums for consultation and promotion of sustainable development, on national or international levels like

- Sustainable Development Solutions Network supported by the United Nations (UN),

- International Sustainable Campus Network (ISCN),

- Association for the Advancement of Sustainability in Higher Education (AASHE)

- Environmental Association for Universities and Colleges (EAUC),

- Principles for Responsible Management Education.

Principles for Responsible Management Education

Purpose

We advance responsible management education to foster inclusive prosperity in a world of thriving ecosystems.

Values

We place organizational responsibility and accountability to society and the planet at the core of what we do.

Teach

We transform our learning environments by integrating responsible management concepts and practices into our curriculum and pedagogy.

Research

We study people, organizations, institutions, and the state of the world to inspire responsible management and education practice.

Partner

We engage people from business, government, civil society, and academia to advance responsible and accountable management education and practice.

Practice

We adopt responsible and accountable management principles in our own governance and operations.

Share

We share our successes and failures with each other to enable our collective learning and best live our common values and purpose.

Number one ranked institutions in relation to a selection of certain SDGs

SDG goal	University	Country
SDG3 – Good health and well-being	Oregon Health and Science University	USA
SDG4 – Quality education	Aalborg University	Denmark
SDG7 – Affordable and clean energy	King Mongkut's University of Technology Thonburi	Thailand
SDG9 – Industry Innovation and Infrastructure	1.University of British Columbia	Canada
	2. University of Toronto	Canada
	3. Technical University of Munich	Germany
	4. Delft University of Technology	Netherlands
SDG 11 – Sustainable cities and communities	University of Manchester	UK
SDG 13 – Climate Action	University of Buffalo	USA
SDG 17 – Partnerships for the goals	University of Newcastle	Australia

Curricular mapping for societal impact

Curricular mapping for societal impact involves aligning educational goals, content, and assessment methods with the aim of preparing students to contribute positively to society.

This process ensures that the curriculum not only imparts knowledge and skills but also fosters values, attitudes, and behaviors that promote social responsibility and civic engagement.

The aims of Curricular mapping for societal impact

- Allign Educational Objectives with Societal Needs

- Identify Gaps and Redundancies

 -Enhance Student Learning Outcomes

- Foster Interdisciplinary Collaboration

- Promote Continuous Improvement

- Support Accreditation and Accountability

1. Define Societal Impact Goals

Institutional Vision and Mission: Committed to fostering global citizens who contribute to social justice, environmental sustainability, and community well-being.

Stakeholder Engagement: Engage a diverse group of stakeholders in workshops to define societal impact priorities.

Identify the broad societal impact goals that the curriculum aims to achieve. These could include:

Promoting social justice and equity

Encouraging environmental sustainability

Fostering community engagement and service

Enhancing cultural competence and global awareness

…………………………………………………………………. (responses from the colleagues)

2. Identify Learning Outcomes

Translate the societal impact goals into specific, measurable learning outcomes.

For example:

- Students will demonstrate an understanding of social justice principles.

- Students will apply sustainable practices in their projects.

- Students will engage in community service and reflect on its impact.

- Students will exhibit cultural competence in diverse settings.

……………………………………………………………… (responses from the colleagues)

3. Map Learning Outcomes to Courses

Align the identified learning outcomes with courses and modules across the curriculum. Ensure that each course contributes to one or more societal impact goals. matrix to visualize the alignment

	Social Justice	Environmental Sustainability	Community Engagement	Cultural Competence
Introduction to Sociology	X			
Environmental Science		X		
Community Service Learning			X	
Global Studies				X

4. Integrate Societal Impact into Course Content

Embed societal impact themes into course content, readings, and activities.

Examples include:

Case studies on social justice issues in a sociology course.

Projects on sustainable practices in an environmental science course.

Service-learning opportunities in local communities.

Discussions on cultural competence in a global studies course.

.... (responses from the colleagues)

5. Develop Assessment Methods

Create assessment methods to evaluate the achievement of societal impact learning outcomes. This could include:

- Reflective essays on community service experiences.

- Projects demonstrating sustainable solutions.

- Exams and quizzes testing knowledge of social justice principles.

- Presentations on cultural competence topics.

Additional Steps

6. Provide Faculty Support and Training - Offer professional development for faculty to effectively integrate and assess societal impact in their courses. This could include workshops, seminars, and resources on best practices.

7. Monitor and Evaluate - Regularly review and update the curricular map to ensure it remains relevant and effective. Use feedback from students, faculty, and community partners to make improvements. Consider conducting surveys and focus groups to gather input.

8. Community and Global Partnerships:- Collaborations with local NGOs, international study programs, and community-based research projects.

9. Reporting and Accountability: Annual reports on societal impact achievements and ongoing initiatives.

Implementation – example for Bachelor of Arts in Social Sciences

Year 1: Foundation

- Introduction to Sociology: Introduction to social justice concepts; reflective essay on a social issue.

- Environmental Science: Basics of sustainability; project on local environmental issues.

Year 2: Development

- Ethics and Society: Exploration of ethical theories and social justice; group project on ethical dilemmas.

- Community Service Learning: Participation in community service; reflective journal on service experience.

- Internship: Real-world experience in a community organization; reflective report on the impact of the internship.

Implementation – example for Bachelor of Arts in Social Sciences

Year 3: Application

- Global Studies: Examination of global cultures; cultural competence presentation.

- Advanced Environmental Science: Advanced sustainability practices; research project on sustainable innovations.

- Capstone Project: Integration of societal impact themes; comprehensive project addressing a societal issue.

Implementation of societal impact for Bachelor of engineering (I)

Year 1: Foundations

Course: Introduction to Engineering

Societal Impact Focus: Ethics in engineering, introduction to sustainable engineering practices.

Learning Outcomes:Understand basic ethical principles in engineering, Describe the importance of sustainability in engineering projects.

Course: Mathematics for Engineers

Societal Impact Focus: Application of mathematical models to solve societal problems.

Learning OutcomesApply mathematical concepts to analyze and solve real-world problems.

Course: Environmental Science for Engineers

Societal Impact Focus: Basics of environmental science and its importance in engineering.

Learning Outcomes: Understand the impact of engineering projects on the environment.

Implementation of societal impact for Bachelor of engineering (II)

Year 2: Development

Course: Materials Science
Societal Impact Focus: Sustainable materials and their impact on the environment.
Learning Outcomes: Evaluate the sustainability of different materials used in engineering.

Course: Engineering Mechanics
Societal Impact Focus: Safe and ethical design principles.
Learning Outcomes: Apply ethical considerations in the design of mechanical systems.

Course: Engineering Design and Communication
Societal Impact Focus: Designing for social good, communication with diverse stakeholders.
Learning Outcomes: Design engineering solutions with a focus on societal needs, Communicate effectively with diverse audiences.

Implementation of societal impact for Bachelor of engineering (III)

Year 3: Application

Course: Thermodynamics
Societal Impact Focus: Energy efficiency and sustainable energy sources.
Learning Outcomes: Analyze energy systems for efficiency and sustainability.

Course: Fluid Mechanics
Societal Impact Focus: Water resources management and environmental impact.
Learning Outcomes: Assess the impact of engineering projects on water resources.

Course: Community Service Learning in Engineering
Societal Impact Focus: Direct community engagement through engineering projects.
Learning Outcomes: Apply engineering skills in a community service project, Reflect on the social impact of engineering solutions.

Implementation of societal impact for Bachelor of engineering (IV)

Year 4: Integration

Course: Capstone Design Project

Societal Impact Focus: Comprehensive project addressing a societal issue using engineering principles.

Learning Outcomes: Integrate knowledge from various engineering disciplines to solve a complex societal problem, Present and defend engineering solutions to a panel of experts and community stakeholders.

Course: Sustainable Engineering Practices

Societal Impact Focus: Advanced sustainable engineering techniques and their application.

Learning Outcomes: Develop and implement sustainable engineering solutions.

Course: Global Engineering

Societal Impact Focus: Working in diverse cultural contexts and understanding global engineering challenges.

Learning Outcomes: Demonstrate cultural competence in global engineering projects, Analyze global engineering challenges and propose viable solutions.

Map Learning Outcomes to Courses

	Social Justice	Environmental Sustainability	Community Engagement	Cultural Competence
Introduction to Engineering	x	x		
Mathematics for Engineers			x	
Environmental Science for Engineers		x		
Materials Science		x		
Engineering Mechanics	x			
Engineering Design and Communication	x			
Thermodynamics		x		
Fluid Mechanics		x		
Community Service Learning	x		x	
Capstone Design Project	x	x	x	
Sustainable Engineering Practices		x		
Global Engineering				x

Conclusions (I)

The development of society has led to the metamorphosis of universities that have gone through several revolutions that have led to the emergence of functions such as research, entrepreneurship and more recently the promotion of sustainable development.

The subject of sustainability is treated, on the one hand, as an integral part in the curriculum of various faculties and inside the topics treated within different courses.

Universities practically apply measures to implement sustainability at a functional level: provide more space for greenery and in safeguarding environment, design and use green building, energy conservation programs, apply renewable energy usage policies, promote waste management programs, design water conservation programs, promote green transportation.

Conclusions (II)

The involvement of universities in promoting the principles of sustainable development has been achieved gradually, these entities embracing the concept of social responsibility. Social responsibility can be seen as a form of integrated self-regulation of university strategy that seeks to enhance the positive effects that these entities have on the environment, employees, students and the community at large or as a deliberate pursuit of the public interest by academic organizations.

Conclusions (III)

The relationship between education and sustainable development is essential, with international forums recognizing the importance of education for the success of promoting the principles of sustainable development at the international level. This is demonstrated by the inclusion of education as a stand-alone goal (SDG 4) on the 2030 Agenda for Sustainable Development and setting up of targets on education under several other SDGs, like those on health; climate change, growth and employment; sustainable consumption and production.

By defining clear goals, aligning learning outcomes with courses, integrating relevant content, and assessing progress, HEIs can create meaningful educational experiences that foster social responsibility and civic engagement. Regular review and adaptation of the curricular map will help maintain its relevance and effectiveness in achieving societal impact goals.

Conclusions (IV)

Key objectives and strategic components:

- Integration of Societal Goals

- Strategic Alignment

- Holistic Education

- Continuous Improvement

- Stakeholder Engagement

- Outcome-Based Design

Thanks for your attention!

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