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Erasmus+ Programme
of the European Union



Development of Regional Joint Master Program in Maritime Environmental Protection and Management - MEP&M -

MEP&M-RELATED MASTERS DELIVERED IN THE UNIVERSITY OF CÁDIZ

**WP1. State of the art on Maritime Environmental Protection and Management.
Dev. 1.1 Overview of master degree programs in field of MEP&M at EU HEIs**

**Dr. Javier García Sanabria, University of Cadiz
18/05/2021**

Virtual meeting via Zoom application

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Project no. 619239-EPP-1-2020-1-ME-EPPKA2-CBHE-JP



University of Cádiz (Spain) European University of the Seas (SEA-EU) Campus of International Excellence of the Sea (CEI-Mar)



The University of Cádiz (UCA) is the coordinator of the European University of the Seas. Along with Universities from Bretagne, Kiel, Gdansk, Split, Malta, and 32 associated partners, the SEA-EU unifies 68 faculties, 117 research institutes and three International Clusters of Excellence in one of the world's leading institutions for marine environment management.

The UCA also coordinates the Campus of International Excellence of the Sea (CEI-Mar), composed by seven Andalusian, Portuguese and Moroccan universities located around the Strait of Gibraltar, together with seven research institutions.

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Four Campuses focused in two bays, Cádiz and Algeciras

Cádiz province, named after the city founded 3.000 years ago by Phoenicians as a strategic trade port, has an remarkable link with the sea currently reinforced with three shipbuilding factories in the bay of Cádiz, and one of the main European maritime ports in the bay of Algeciras.

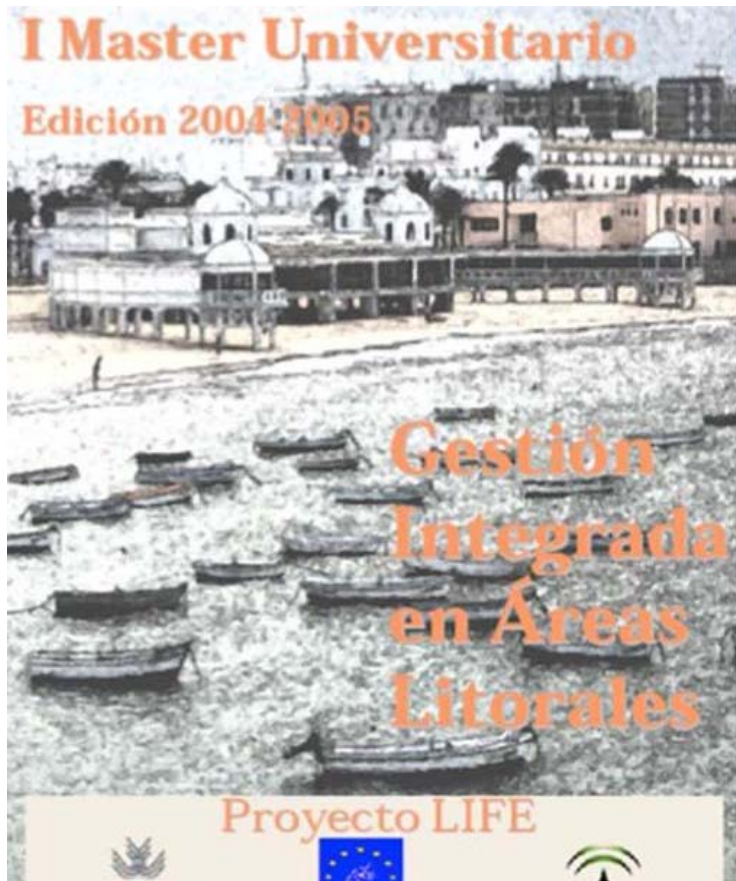
From the 15th century there were in Cádiz a College of Pilots, followed by the creation of the Nautical Cathedral in 1682. Between 1717 and 1818 were created the Academy of Marine Guards Knights, the Astronomical Observatory, the Royal Navy College of Surgery and the first School of Commerce of Spain. The UCA was founded in 1979 having 6.000 students. Nowadays, they are 22.000.



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INTEGRATED COASTAL ZONE MANAGEMENT MASTER DEGREE

- One of the **oldest master** in the University (17 years)
- A Master that came from an **European Project**
- At the beginning it was **focused to managers**

Speaker:
Dr. Javier García Sanabria



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MASTER'S DEGREE IN INTEGRATED COASTAL ZONE MANAGEMENT (ICZM) (2373)

OBJECTIVE: To provide experts capable of tackling the challenges posed by coastal management.

DEGREES WITH DIRECT ACCESS

- **High Preference:** Marine Sciences; Environmental Sciences; Geography; Biology.
- **Medium preference:** Geology; Law; Economy; Chemistry; Sociology; Political Science; Engineering; Business Administration and Management.

OTHER QUALIFICATIONS

If the applicant meets the established legal requirements, the decision will be subjected to the criterion of the Postgraduate Studies Commission of the University of Cadiz (Comisión de Estudios de Posgrado de la Universidad de Cádiz).

BASIC MODULE (40 ECTS)	COMPULSARY	Code	Subjects	ECTS	
		2373001	Integrated Management for the Sustainability of Coastal Areas	5	FIRST TERM
		2373002	Structural Elements and Processes of ICZM	5	
		2373003	ICZM Plans and Projects: Models, Formulation and Design	5	
		2373004	Ecosystem Approach to ICZM	5	SECOND TERM
		2373005	Natural Coastal Risk Assessment	5	
2373006	Geographic Information System (GIS) Applied to ICZM	5			

Choose one of the 10 ECTS options

SPECIFIC MODULE (10 ECTS)	TO CHOOSE BETWEEN TWO	INTEGRATED MANAGEMENT OF ANTHROPIZED COASTAL AREAS			INTEGRATED MANAGEMENT OF THE NATURAL MARINE AND COASTAL ENVIRONMENT			
		Code	Subjects	ECTS	Code	Subjects	ECTS	THIRD TERM
		2373101	Integrated Management of Beaches and Coastal Tourism Areas (I)	5	2373201	Marine Spatial Planning	5	
		2373102	Integrated Management of Beaches and Coastal Tourism Areas (II)	5	2373202	Integrated Analysis and Diagnosis of Pollution in Coastal Areas	5	

Choose one of the 14 ECTS options

APPLICATION MODULE (20 ECTS)	TO CHOOSE BETWEEN TWO	RESEARCH PROFILE			PROFESSIONAL PROFILE				
		Code	Subjects	ECTS	Code	Subjects	ECTS	FOURTH TERM	
		2373901	Scientific Research Methods and Tools for ICZM	4	2373903	Development of Innovative Businesses and Projects	2		
		2373902	Introduction to Research	10	2373904	Internship	12		
		2373905	FINAL THESIS (6 ECTS)						

MASTER'S DEGREE IN INTEGRATED COASTAL ZONE MANAGEMENT

TOTAL: 60 CREDITS
Each credit is equivalent to 25 hours of work by the student

INTEGRATED COASTAL ZONE MANAGEMENT MASTER DEGREE

The common module is mandatory for all the students

It is composed by a set of subjects of high importance to the ICZM Master Degree with two main objectives:

- 1) **Understanding the issue:** ICZM, Frameworks and methods, Ecosystem approach,...
- 2) **ICZM, making it happen:** Strategic and operative tools: plans, projects, GIS,...

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	2373001	Integrated Management for the Sustainability of Coastal Areas	5
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Scheme for studying ICZM

THE OBJECT:
MARINE-COASTAL AREAS

1. The coastal system
2. The environmental subsystem
3. The social and economic subsystem
4. The jurisdictional –administrative subsystem
5. The problems of coastal areas and its resources

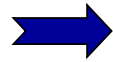
THE OBJECTIVE:
Integrated management

6. Formal issues
7. Methodological issues
8. Strategic issues
9. Operative and instrumental issues
10. Technical issues



TRIPLE SINGULARITY OF COASTAL/MARINE ZONES

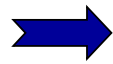
PHISICAL
AND
NATURAL



Dynamism,
diversity and
fragility

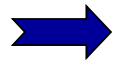


SOCIAL AND
ECONOMICAL



Concentration of the
population, Multiple
uses and activities.
Dynamism

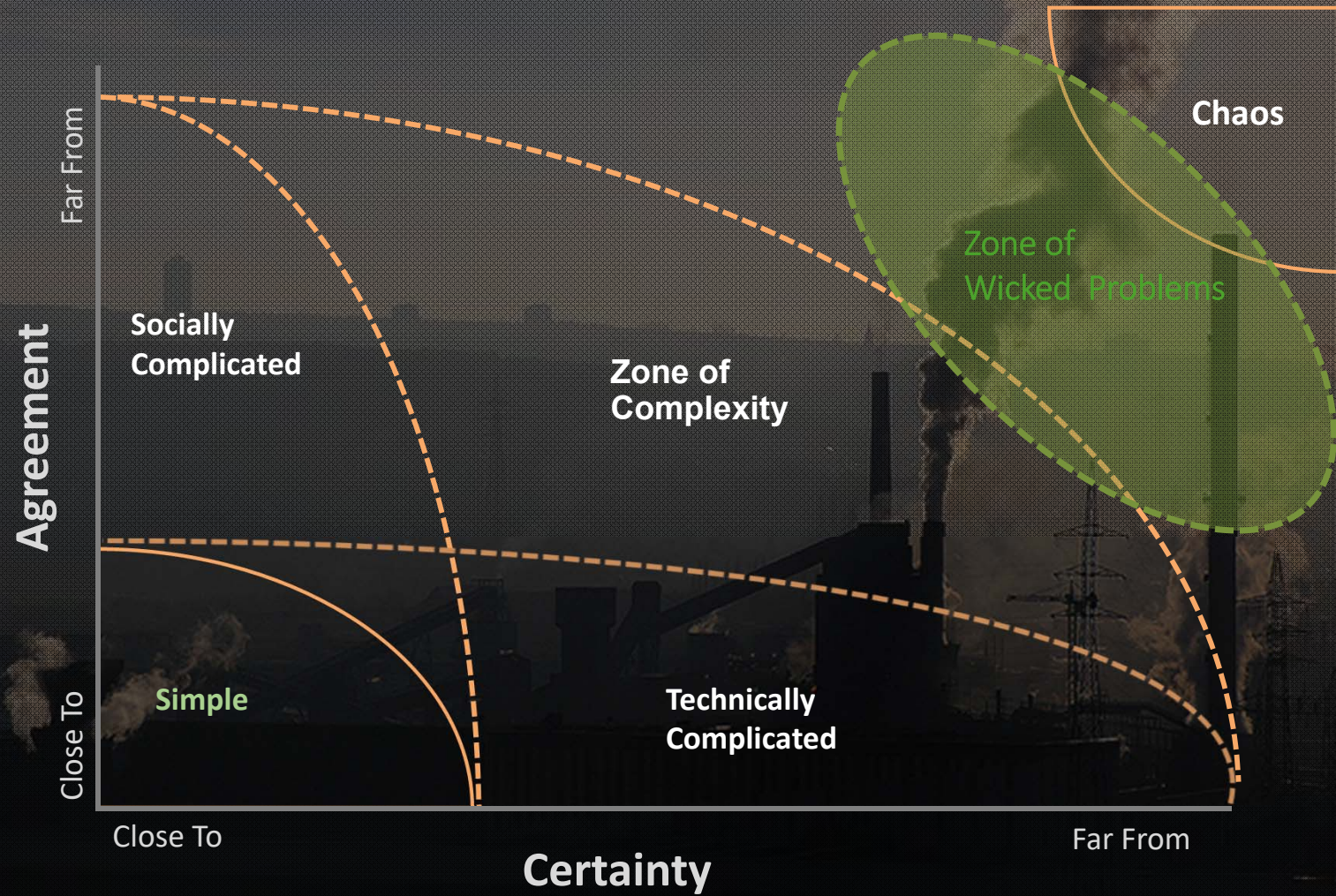
JURISDICTION
AND
ADMINISTRATION



Many institutions
converge in the
coastal zones



THE APPROACH: COASTAL/MARINE MANAGEMENT IS A PUBLIC POLICY



Source: Patton, 2011

Source: Houstrittel & Melvin Webber, 1973

Medium anual value of the world ecosystems services (Constanza et al. 1997)

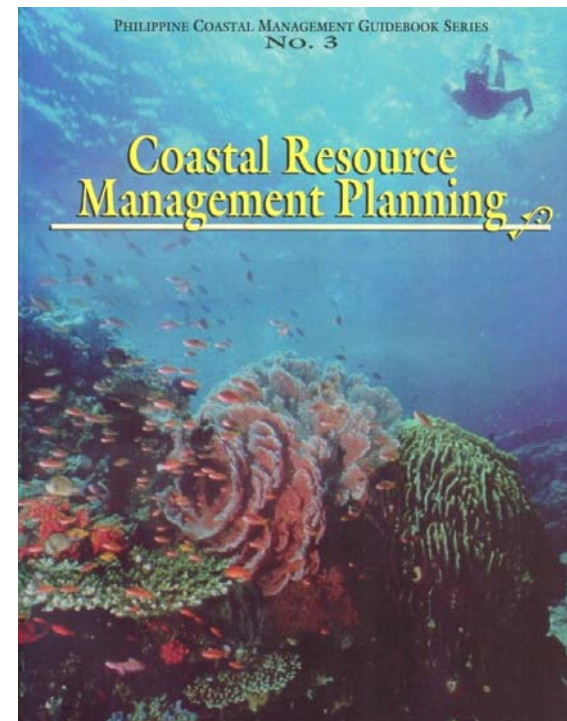
BIOTA	Área (ha x 10⁶)	Total value (\$ x ha / year)	Total flux value (\$ / year/10⁹)
Total	51.625		33.268
Terrestrial	15.323	804	12.319
Tropical forest	1.900	2.007	3.813
Temperate forest/Boreal	2.955	302	894
Praderas	3.898	232	906
Cultivated land	1.400	92	128
Marjales/manglares?	165	9.900	1.648
Marine	36.302	577	20.949
Open ocean	33.200	252	8.381
Coastal waters	3.102	4.052	12.568
<i>Estuarines</i>	180	22.832	4.110
<i>Praderas</i>	200	19.004	3.801
<i>Coral reefs</i>	62	6.075	375
<i>Continental shield</i>	2.660	1.610	4.283

Urgency of coastal/marine management

✓ Deterioration of space and resources, **increasingly irreversible**

✓ Recover certain resources is **more costly in time and money** than to keep them (reefs, seagrass beds ...).

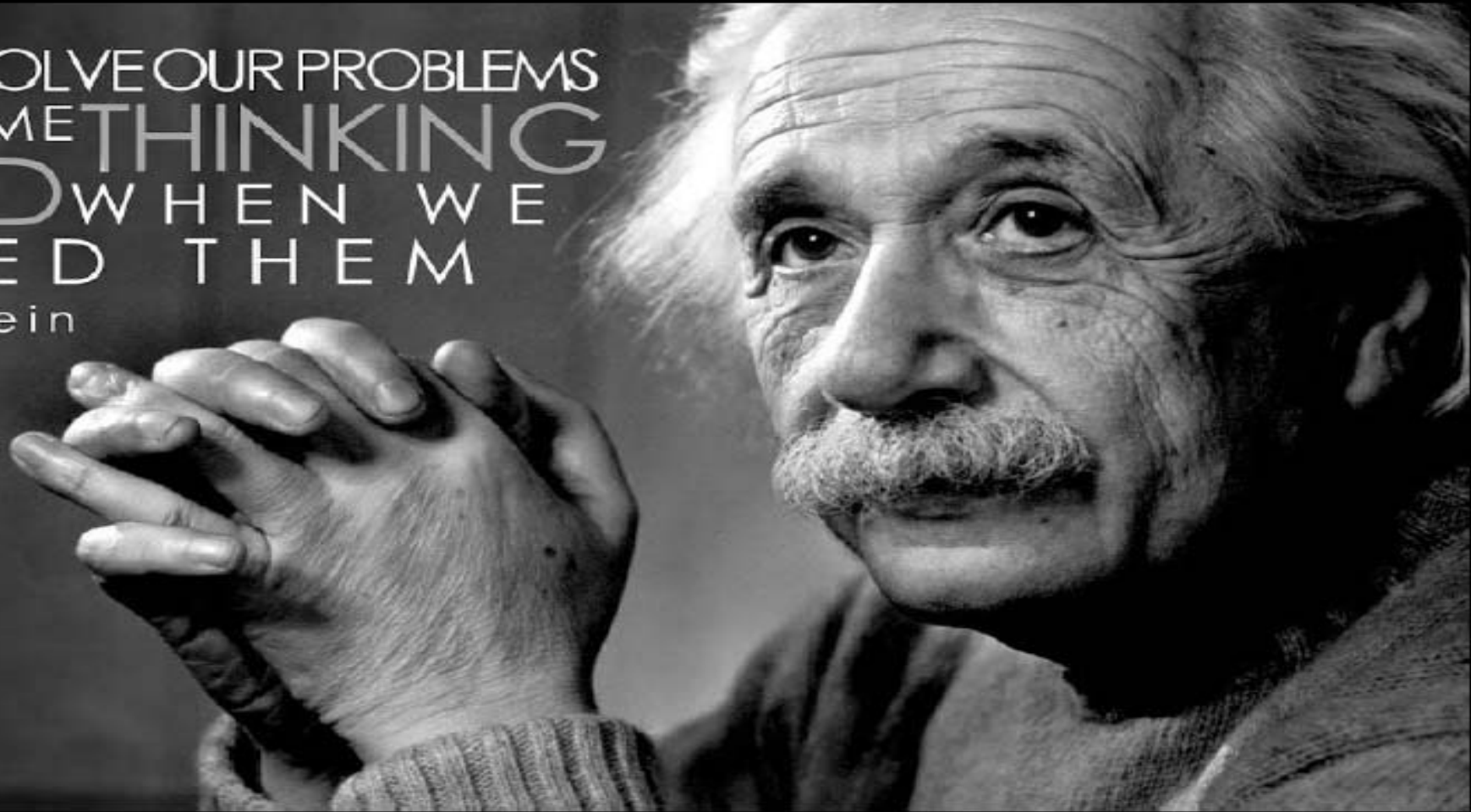
✓ Coastal Management Programs **do not give general and visible benefits until ten or more years** of implementation.



HOW CAN WE DO INTEGRATED MANAGEMENT REALITY?

WE CANNOT SOLVE OUR PROBLEMS
WITH THE SAME THINKING
WE USED WHEN WE
CREATED THEM

-Albert Einstein



Governance or integrated management

The formal and informal arrangements, institutions, and mores that structure and influence:

- How resources or a spatial area are utilized
- How problems, opportunities are evaluated, analyzed
- What behavior is acceptable or forbidden
- What rules & sanctions are applied to affect how natural resources are distributed and used

FRAMEWORKS AND MODELS FOR ICZM

ICZM DECALOGUE

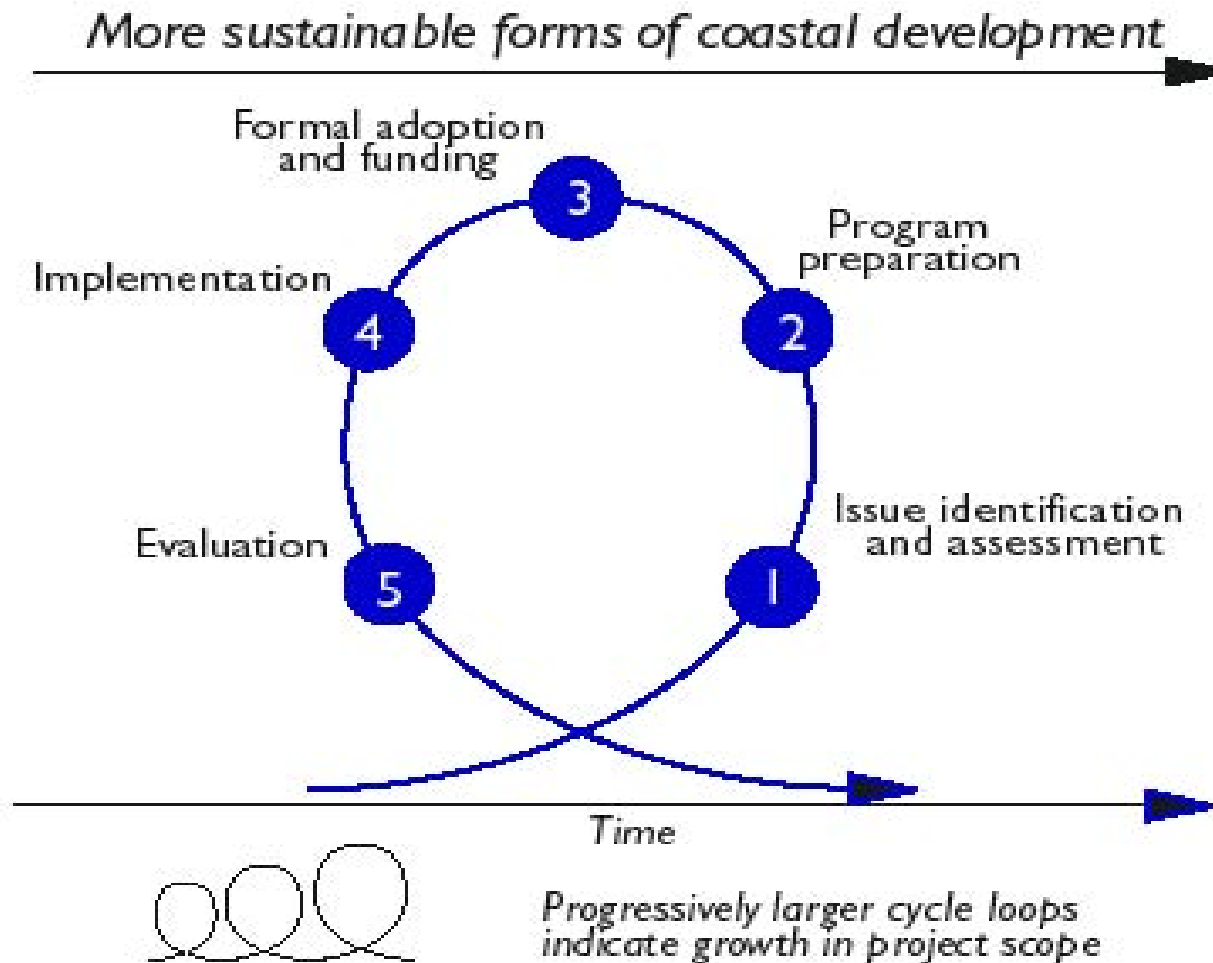
Barragán, 2003

KEY ISSUES

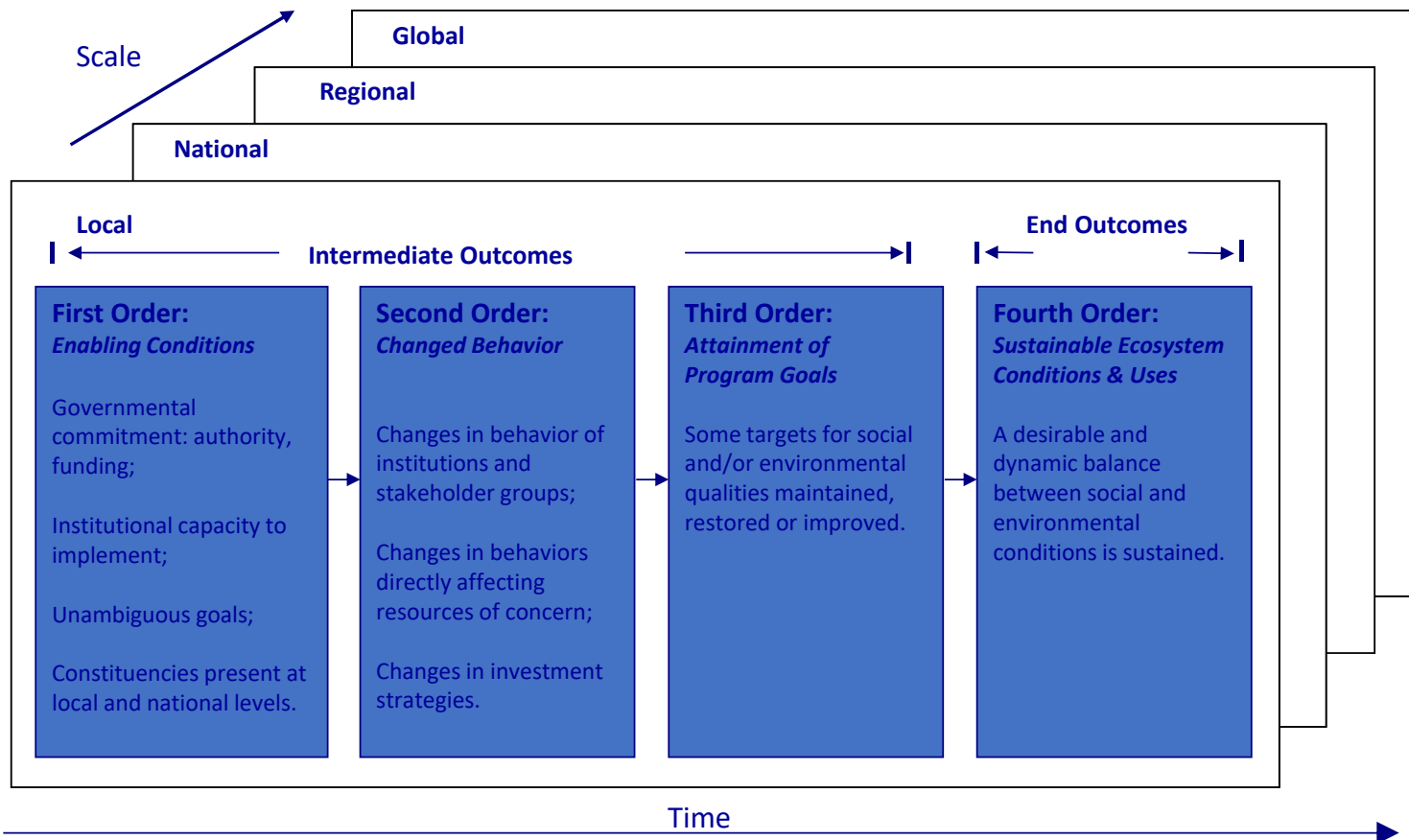
1. *Policy*
2. *Normative*
3. *Responsibilities*
4. *Coordination and cooperation*
5. *Instruments*
6. *Formation and training*
7. *Economic resources*
8. *Information and knowledge*
9. *Environmental education, communication, public awareness*
10. *Participation*



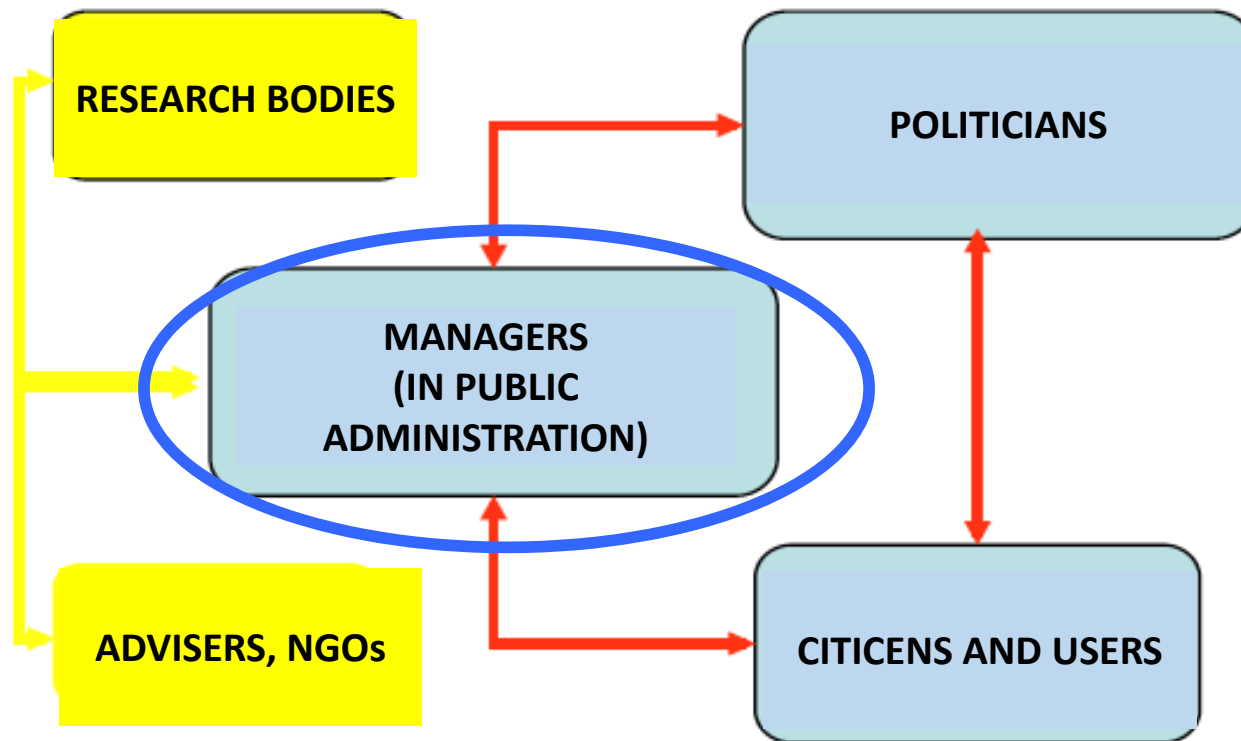
Policy cycle framework



The Orders of Outcomes



Source: Olsen et al., 2006



Barragán, 2014

MANAGERS TASKS IN A COASTAL/MARINE MANAGEMENT PROCESS

Solve problems and conflicts related to different interests or users of coastal resources (fishing sport-fishing professional, p. E.).

Warn and prevent public authorities, or to any private agent, about the problems and conflicts that occur in the present, as well as those that may occur in the future. Such warnings should be accompanied by suggestions for their solution (impacts of urbanization of dune, p fields. E.).

Specifying the environmental costs and externalities of a human activity, since the dynamism, the fragility and the high degree of interaction between processes and coastal phenomena, recommend special emphasis on this goal (environmental impact and relationship with other sectors of aquaculture, pe).

Provide guidelines to improve the management of resources and public property (suggesting the special monitoring of a specific indicator, p. E.).

Identify coastal areas of interest, and resources that may be threatened, to recommend conservation and protection (natural landscapes, p. E.).

Protect ecological processes and critical habitats, especially those that are considered of special value for the conservation of biological diversity (wetlands, p. E.).

Properly locate in space different uses and economic activities, so that they are not incompatible with each other (industrial and tourism developments, p. e.).

Determine the capacity that has the space and coastal resources (capacity of a coastal town to host visitors, p. E.).

MANAGERS TASKS IN A COASTAL/MARINE MANAGEMENT PROCESS

Determine the degree of efficiency in the use of resources in order to clarify how its optimum performance is reached (operating a bank bivalves, p. E.).

Reduce risks and threats, both natural and anthropogenic, that loom over goods and people especially in coastal borders (keeping natural defenses against possible tidal, flooding. p E.).

Promote coordination and cooperation between public institutions, and between them and private sector. This objective is derived from one of the main problems identified in the planning and management of coastal areas (rapprochement between regional and local administration to solve a problem of urban discharges to the marine environment, p. E.).

Encourage participation and seek social consensus as a democratic practice formula, and facing problems involving significant public resources and a considerable number of users (search for a particular model of development for a coastal forest, p. E.).

Increase public awareness of coastal issues and resources as well as possible solutions. Then, the general population becomes strategic partner of any initiative (campaign on fishing and consumption of immature, p. E.).

Strengthen institutional capacity so that public administration has resources to respond to problems. Resources can be of various types: regulatory, material and human (prepare specific training plans for technicians who provide services in coastal areas..).

Provide guidance to improve the development model, and to stop the deterioration of coastal areas and its resources. This contributes to overcoming the traditional confrontation between conservation and development (guidelines for urban planning of a stretch of coastline, p. E.).

...So what should be the knowledge/skills of the coastal/marine manager?

	Coastal/marine zones	Integrated Management
Sophón	Knowledge about ecosystems functioning with different degrees of impacts or transformation	Basic knowledge related with social sciences: rules, economy, sociology, history, policy, education, geography,...
Techné	Capacity to evaluate	Public policies, strategic planning, public participation, decision making process, procedures.
Poiesis	Ecologic ethic, Awareness and interest	Leadership, communication, mediation, negotiation, conflict resolution.

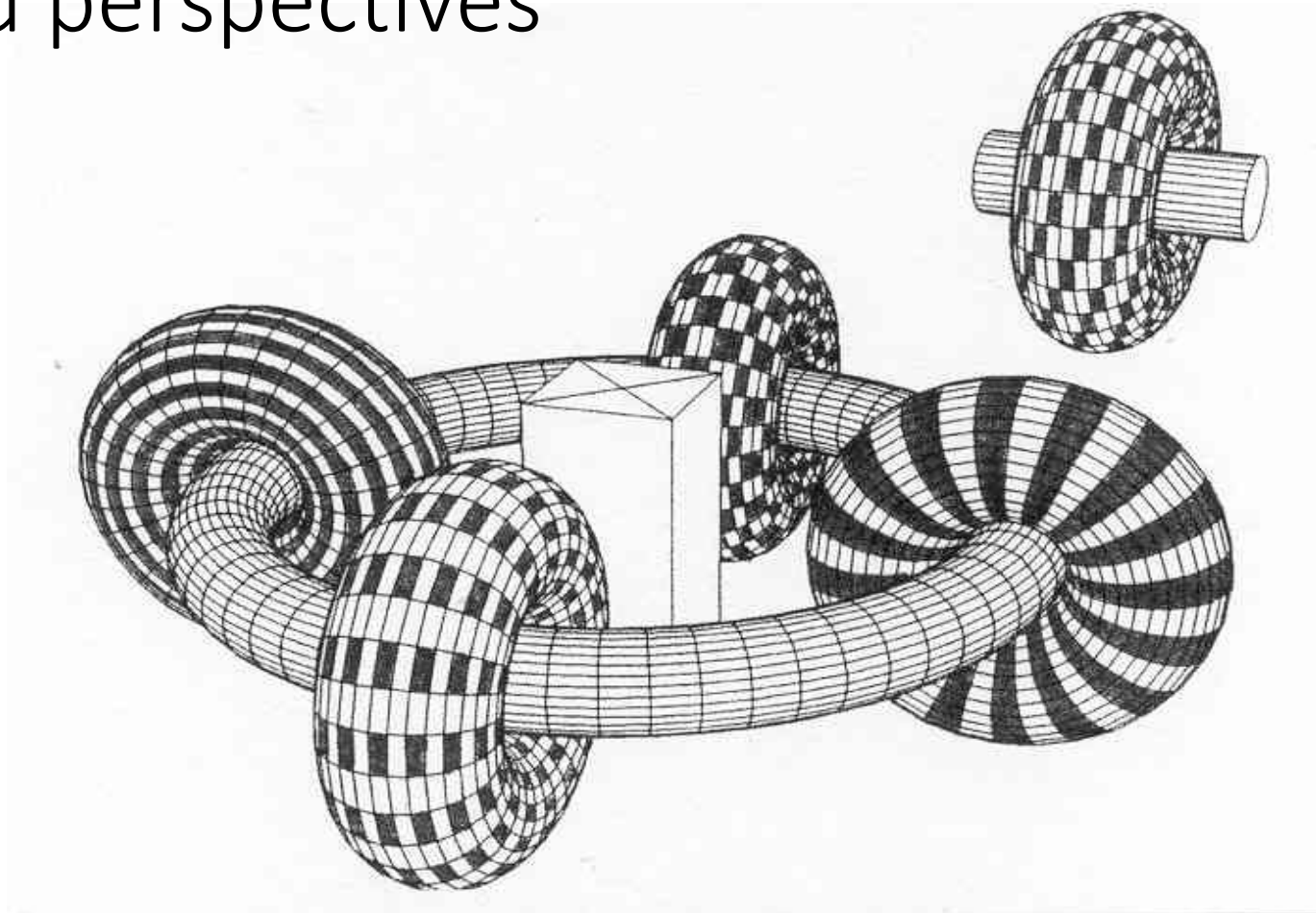


Barragán, 2014

Diverse Perspectives of Specialists



Epistemic community of specialists with shared perspectives



Rethinking postgraduate education for marine conservation

A.Langholz^aAdinaAbeles^b *Marine Policy* (2014).

<https://doi.org/10.1016/j.marpol.2013.06.014>

- **The most critical skills** include innovation, collaboration, and communication.
- The highest ranked skills are **rarely included in postgraduate education.**
- Research suggests a **new direction for programs** training future marine leaders.

Average scores given to 24 skills by successful marine conservation leaders in terms of priority for career success and importance to learn during postgraduate education.

Specific skills	Importance for career success		Best learned as postgraduate	
	Mean	Rank	Mean	Rank
The art of persuasion (written and oral)	3.82	1 (tie)	3.68	1
Generate ideas/think creatively	3.82	1 (tie)	3.64	2
Build and lead teams	3.79	3	3.33	7 (tie)
Communicate with policy/decision-makers	3.68	4 (tie)	3.33	7 (tie)
Forge partnerships	3.68	4 (tie)	3.27	10
Prioritize action	3.68	4 (tie)	3.35	6
Create a vision	3.68	4 (tie)	3.42	4
Listening well	3.68	4 (tie)	3.44	3
Make decisions based on limited data	3.50	9 (tie)	3.22	11
Write proposals	3.50	9 (tie)	3.30	9
Mentoring others	3.46	11	2.65	21
Engage with the news media	3.43	12	2.84	19
Facilitate effectively	3.39	13	3.20	12 (tie)
Resolve conflicts	3.32	14 (tie)	3.05	15 (tie)
Manage budgets	3.32	14 (tie)	2.83	20
Use social media effectively	3.29	16 (tie)	2.92	18
Fundraise	3.29	16 (tie)	2.59	22
Develop management plans	3.21	18	2.95	17
Build/coordinate a grassroots campaign	3.07	19	2.58	23
Evaluate projects	3.04	20	3.05	15 (tie)
Cultivate major donors	2.96	21	2.38	24
Communicate with business leaders	2.89	22	3.14	14
Securing a mentor	2.86	23	3.41	5
Ability to work with GIS	2.39	24	3.20	12 (tie)

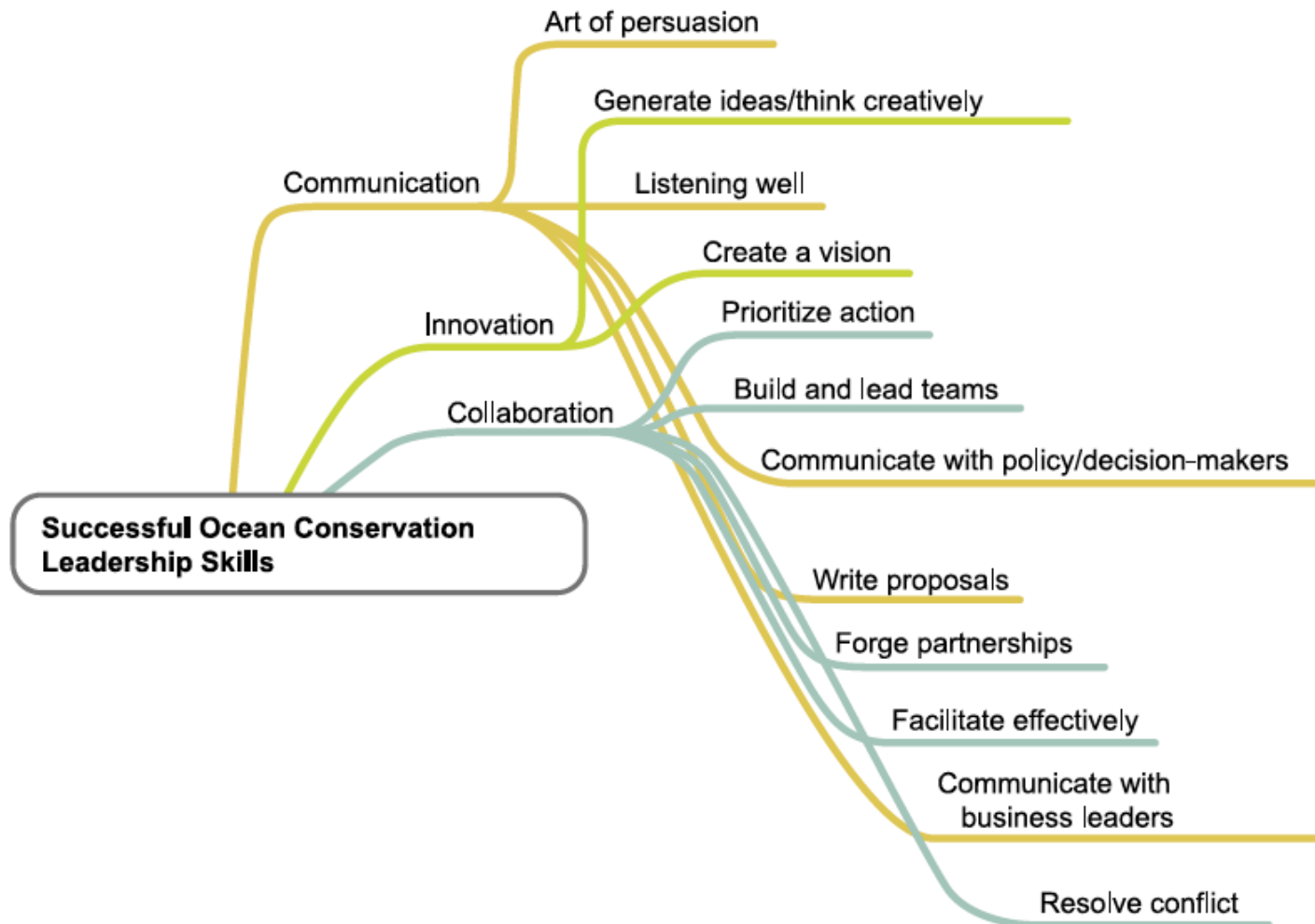


Fig. 1. Conceptual categorization of highly ranked skills to learn during postgraduate education.

¡GRACIAS!

Thank you

Faleminderit

Hvala.

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