



Learning Communities bridging education, science, society and culture for societal impact on Curaçao

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Combatting Brain Drain and Empowering Young People

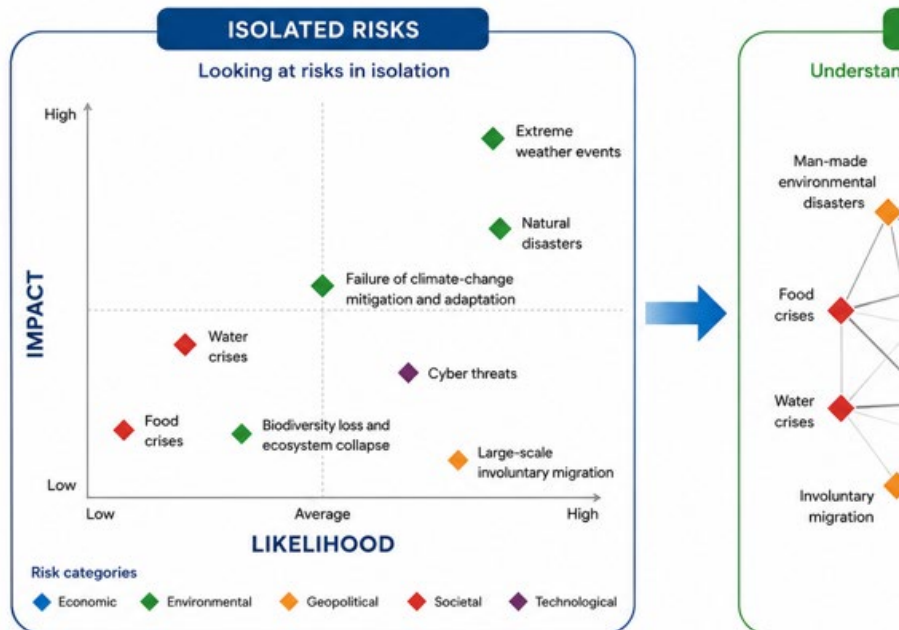
Sustainable  TU Delft



System issues on Curacao

PENDING DISAST

From isolated risks to interconnected gl



KEY TAKEAWAY: Today's global risks are deeply interconnected. Addressing them requires collaborative, systemic solutions.



WHAT IS THE VISIBLE PROBLEM?



Flooding



Erosion along roads and neighborhoods



Pollution of beaches and coral reefs



Public health issues due to stagnant water



Damage to homes and infrastructure



WHICH DISCIPLINES ARE NEEDED?

Discipline	Contribution
 Climate & Environment	Understanding rainfall patterns, erosion, biodiversity
 Civil Engineering	Water management, infrastructure
 Public Health	Health impacts on residents
 Economics	Costs, investments, tourism
 Governance & Policy	Legislation and spatial planning
 Social Sciences	Behavior, participation, acceptance
 Education	Awareness and capacity building

THE CURAÇAO DIMENSION: FROM TALENT DRAIN TO THE BLUE WAVE CHANGEMAKERS



CONNECTED
TO CURAÇAO



PROUD OF THEIR
CONTRIBUTION



RESPONSIBLE
CHANGEMAKERS



CO-CREATORS OF A
SUSTAINABLE FUTURE



BUILDERS OF THE ISLAND
THEY WANT TO LIVE IN

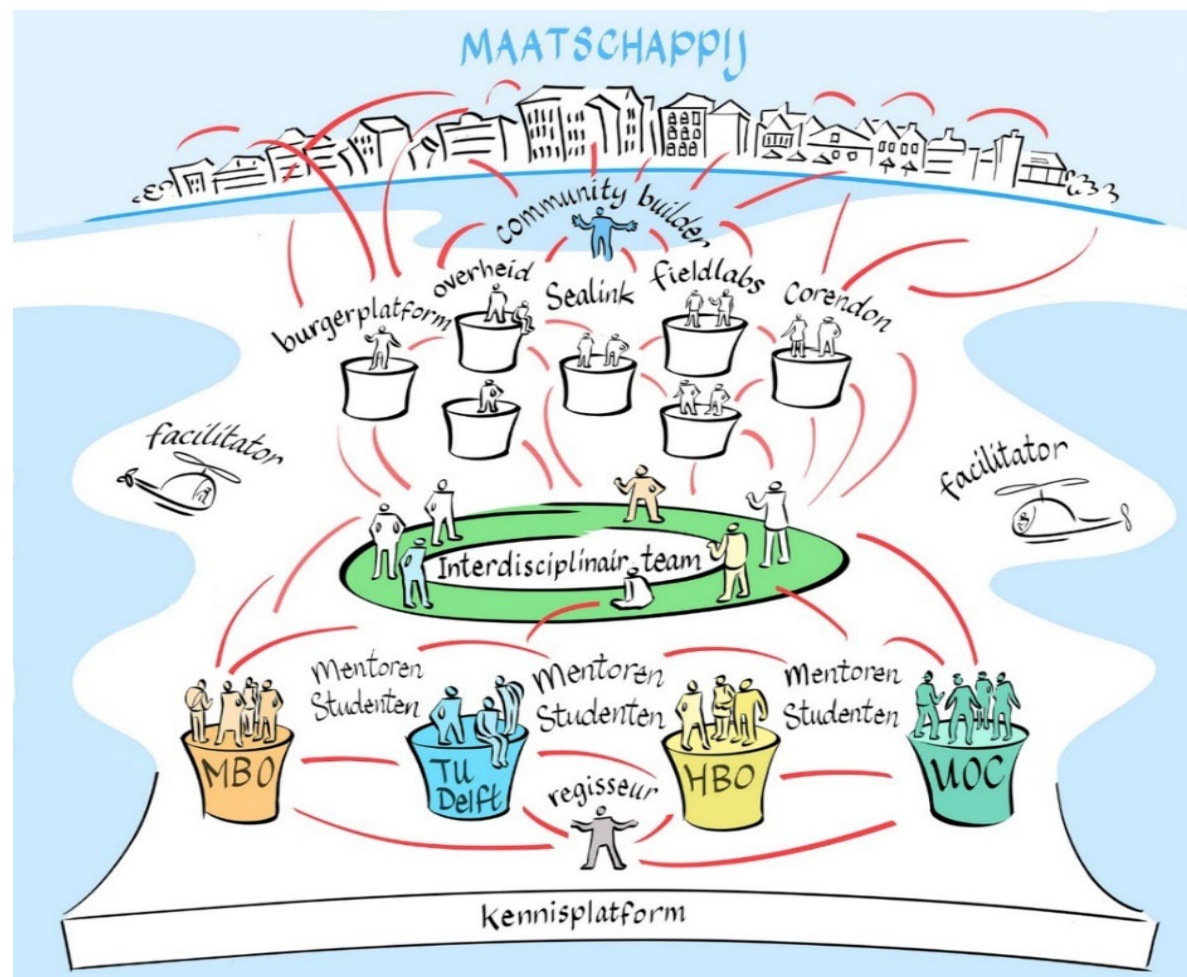


From *Talent Drain* to *Blue Wave Changemakers*:

Empowering young people to build the future they want to live in.



Shifting the educational paradigm, by flipping the system!



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Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research*, 81(2), 132–169.

Learning Communities in practice at Curacao



SUSTAINABLE ENVIRONMENT



WATER
MANAGEMENT



HEAT STRESS
ADAPTATION



ENERGY
TRANSITION



SUSTAINABLE
BUILDING



HEALTHY NEIGHBORHOOD



PHYSICAL ACTIVITY
AS A MOVEMENT



HEALTHY
LIFESTYLE

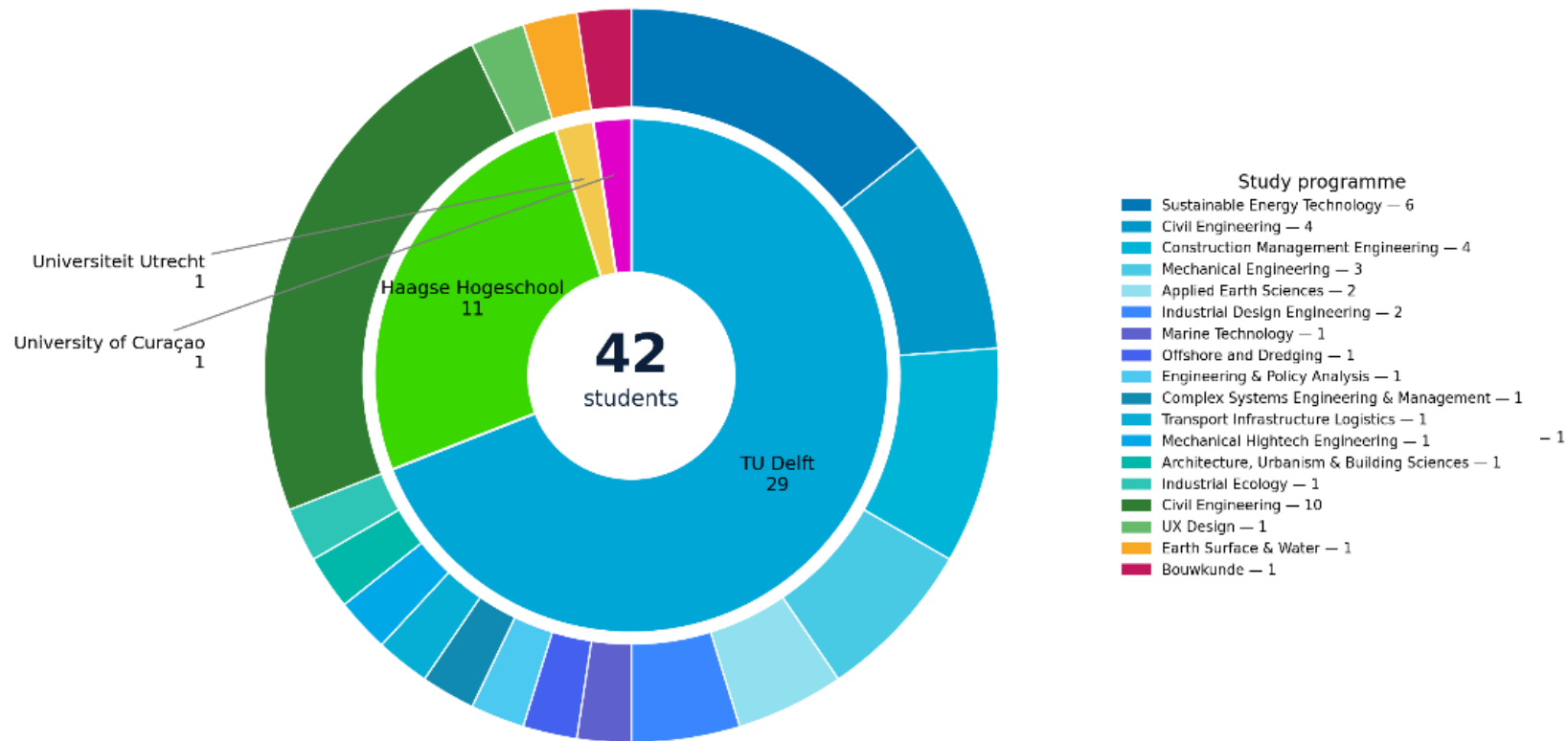


FOODMONITOR
CURAÇAO

Student Results

LC Sustainable Environments Curaçao 2025-2026

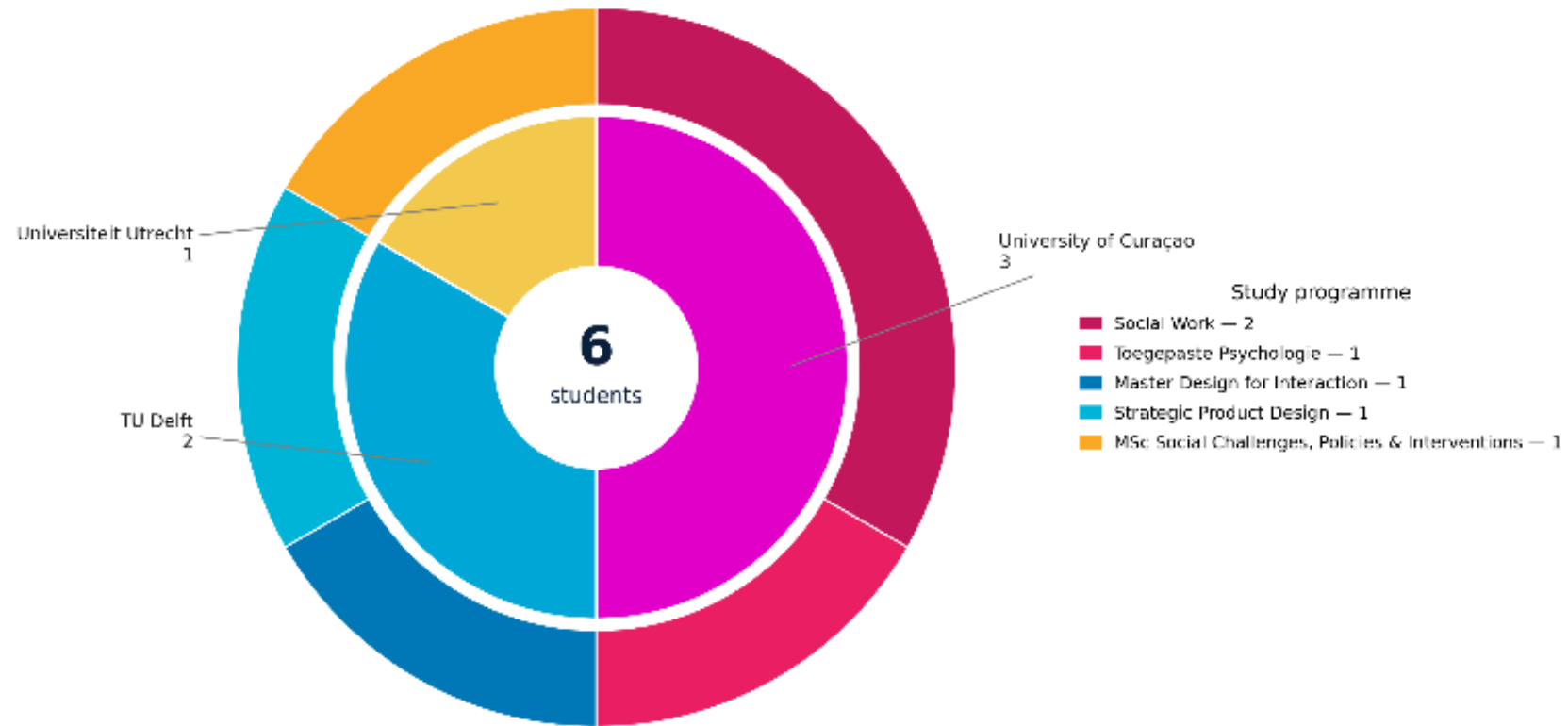
Inner ring = institution • Outer ring = study programme



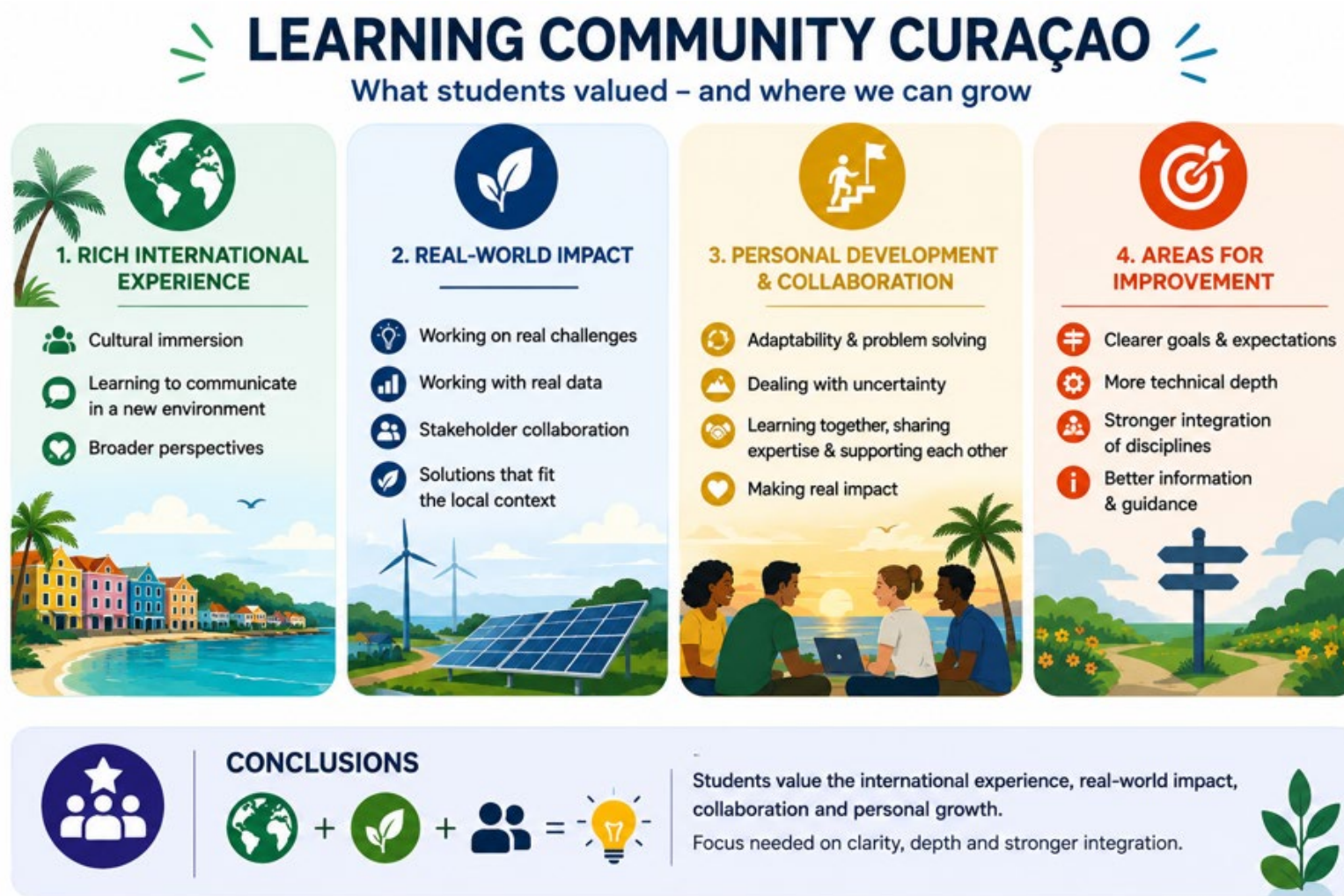
Student Results

LC Gezonde Wijk 2025-2026

Inner ring = institution • Outer ring = study programme



Student Reflections



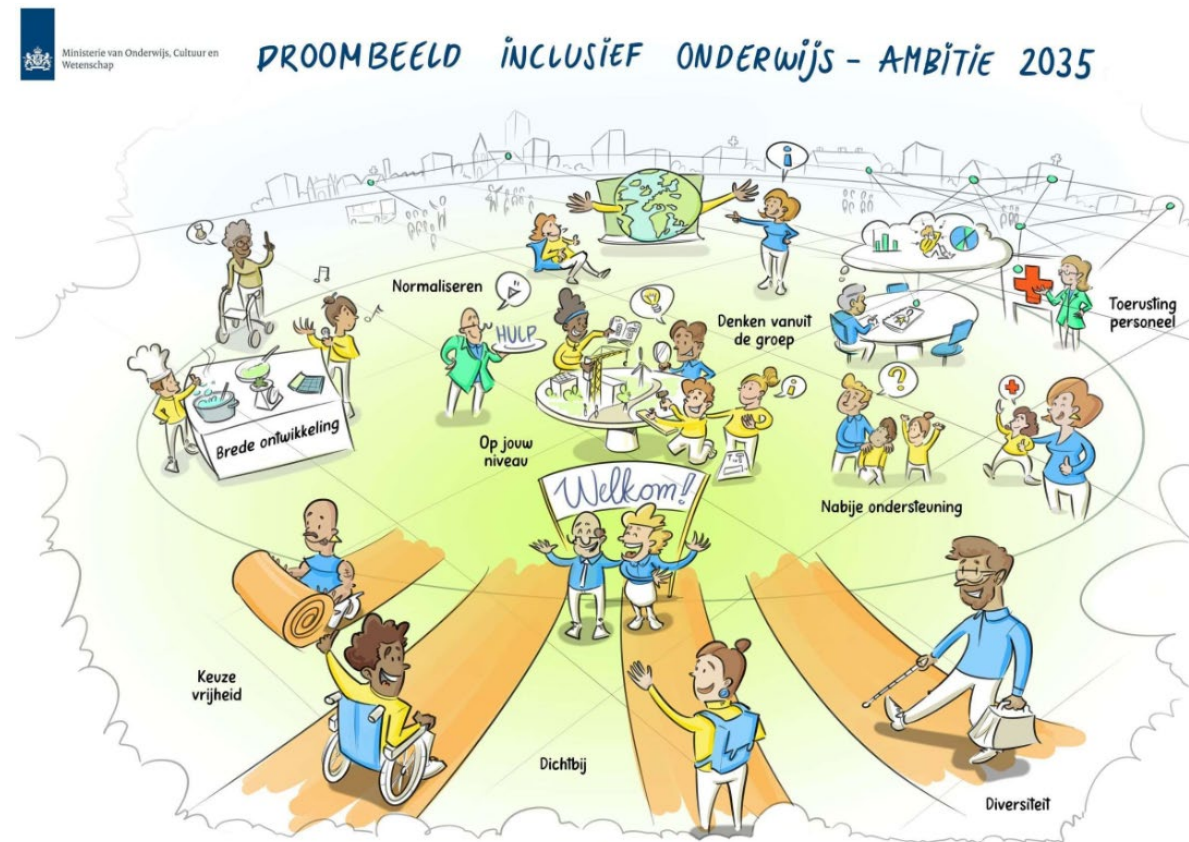
Next steps

- Connecting all students UoC in minor “Sustainable impact in action”
- Estafette learning as stronger principle
- More mbo-students
- Fostering community
- Setting up an Alumni group

Take a look at our website:

www.thelearningcommunities.nl

[Sustainable Environments](#) | [Even Groene Vrienden](#)



Contributing

Dr. Richenel Bulbaal, Coordinator LC Sustainable Environment, Dean Technical Faculty UoC

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Nadege Heyligar, Regisseur (connector curricula)

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Linette Bossen, MSc, programme manager "Even Groene Vrienden Learning Communities" TUD

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Join our Community!!

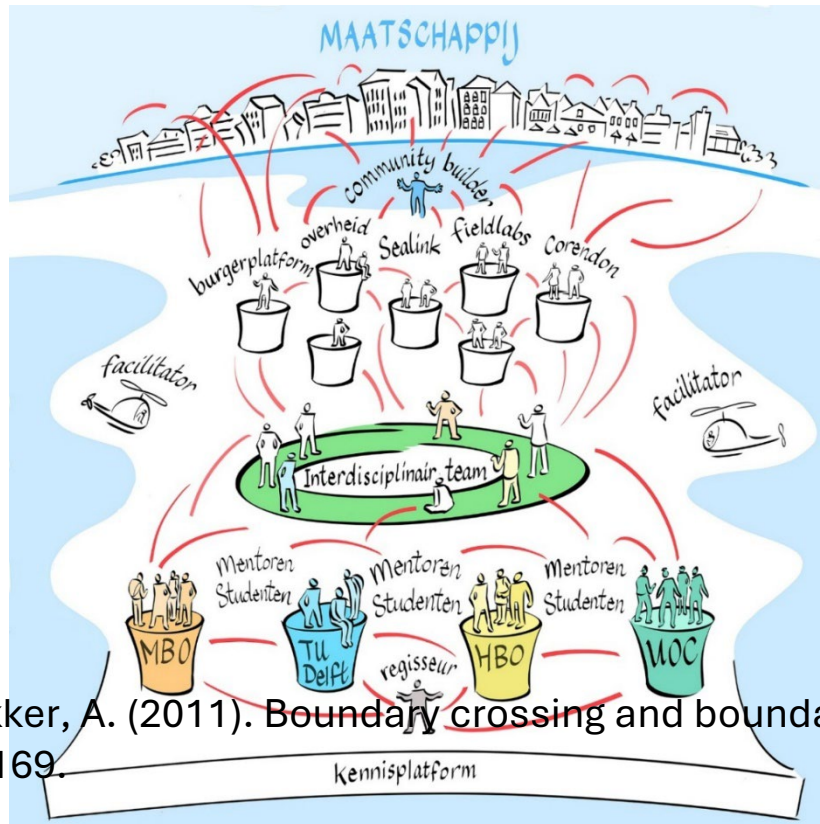


Thank you for your attention!
Any questions?

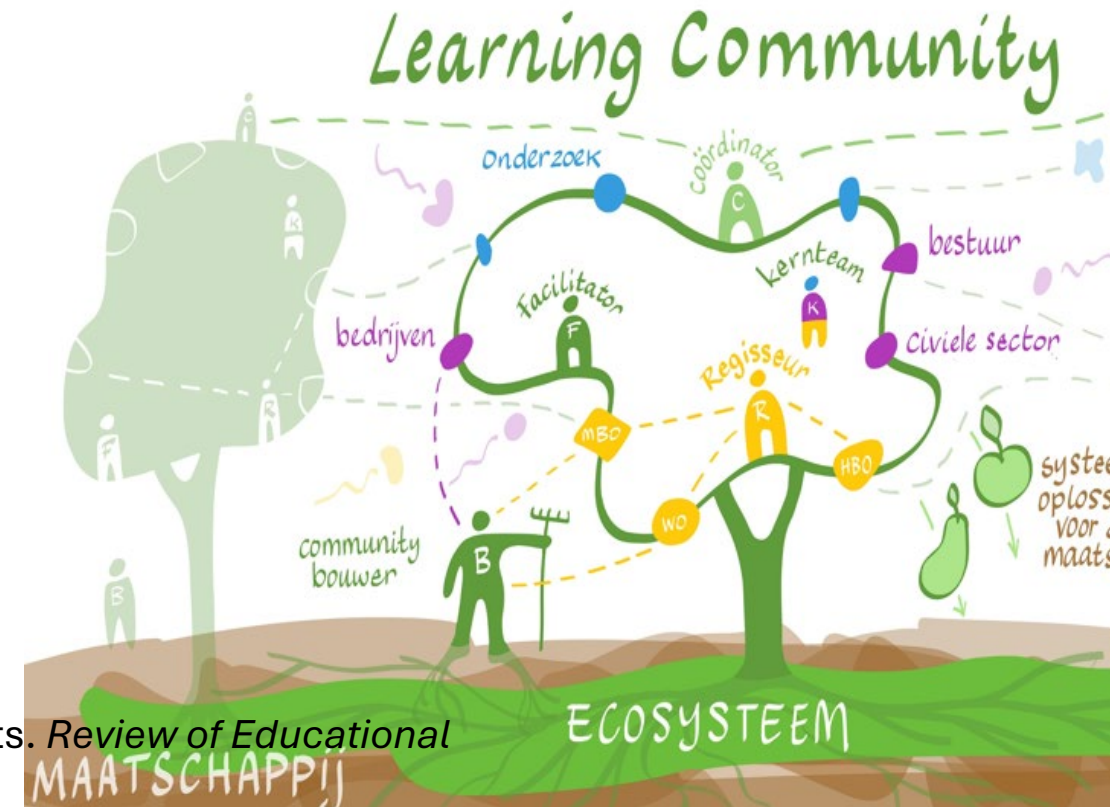
What make LCs unique

The learning model

- Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research*, 81(2), 132–169.



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Sustainable

TU Delft

UOC OF CURAÇAO
DR. MOISES DA COSTA GOMEZ

LEARNING COMMUNITIES (LCs) IN CURAÇAO

Together we build sustainable solutions for a better future

In Learning Communities, students from different educational levels, disciplines and perspectives work together on **real-life system challenges** that matter for Curaçao.



We connect education, research and society to create impactful, sustainable solutions for Curaçao.

WHO WE ARE

- Dr. Richenel Bulbaai – Dean, Technical Faculty UoC
- Prof. Dr. Liesbeth Echteld – UCRI
- Tamara van den Aerde – Coordinator Technical Faculty
- Nadege Heyligar – The Hague University of Applied Sciences
- Gershwin Mutueel – Lecturer UoC
- Katinka Bos – The Hague University of Applied Sciences
- Ergun Erkoçu – Lecturer & Researcher
- Together with students from diverse perspectives (domains, HBO, WO and MBO)

WHO WE ARE

Students from leading knowledge institutions collaborate across disciplines and levels:



We work together with companies, government and citizens on system solutions for a sustainable Curaçao.



LEARNING TOGETHER FOR TRANSFORMATIVE IMPACT



Students come together in weekly sprints and co-creation sessions to iterate, learn and build solutions that no one can achieve alone.

OUR PARTNERS IN CURAÇAO



Together we connect knowledge, innovation and local needs.

REAL SYSTEM CHALLENGES STUDENTS WORK ON



These challenges are complex and interconnected – requiring **system solutions** that integrate technology, people, environment and policy.

THREE LEVELS OF LEARNING COMMUNITIES



1. THE LEARNING COMMUNITY

Students, educators, researchers and stakeholders collaborate in teams on real-life challenges through iterative sprints and co-creation.



2. THE COMMUNITY

Multiple teams, partners and stakeholders connect, share knowledge and learn from each other across themes and projects.



3. THE ECOSYSTEM

We build a sustainable innovation ecosystem on Curaçao where education, research, businesses, government and citizens work together for lasting impact.



Learn more:
thelearningcommunities.nl/learningcommunities/sustainableenvironments



From technical solutions
to societal impact



Students today,
changemakers tomorrow



Learning together for
a sustainable Curaçao

OPLEVERING VAN DE TOEGANG TOT WATER EN DE OMGEVING

KLIMAATBESTENDIG EN GEZOND CURAÇAO



Een sterk voorbeeld voor Curaçao is klimaatadaptatie en een gezonde leefomgeving. Dit laat goed zien waarom je professionals nodig hebt die systeemoplossingen kunnen ontwikkelen in plaats van alleen oplossingen vanuit één discipline.

HET ZICHTBARE PROBLEEM

Na hevige regenval ontstaan:



Overstromingen



Erosie van wegen en wijken



Vervuiling van baaien en koraalriffen



Gezondheidsproblemen door stilstaand water



Schade aan woningen en infrastructuur



WAAROM DIT GEEN TECHNISCH PROBLEEM IS

Een civiel ingenieur zou kunnen zeggen:
"We bouwen grotere afwateringskanalen."

Dat helpt, maar lost het systeemprobleem niet op.



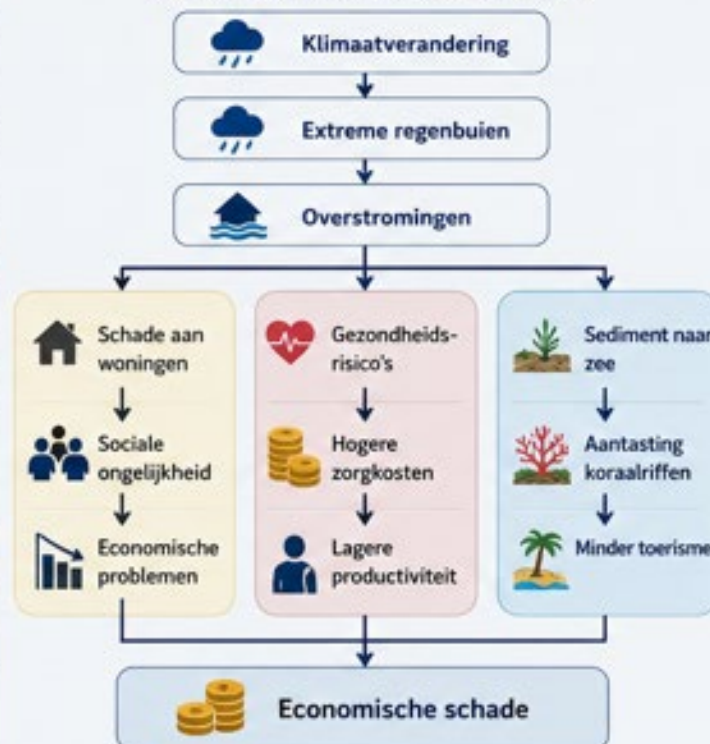
KERNBOODSCHAP VOOR EEN SLIDE

Systeemvraagstuk Curaçao

Overstromingen zijn geen waterprobleem.

Ze zijn tegelijkertijd een klimaat-, gezondheids-, economische-, sociale- en biodiversiteitsuitdaging.

WAT HANGT ER ALLEMAAL SAMEN?



ROL VAN DE PROFESSIONAL



- ✓ Begrijpt het hele systeem
- ✓ Verbindt disciplines
- ✓ Werkt samen met bewoners, overheid en bedrijven
- ✓ Zoekt naar oplossingen die meerdere doelen tegelijk dienen
- ✓ Kijkt naar lange termijn impact

WELKE DOMEINEN ZIJN NODIG?

Domein	Bijdrage
Klimaat & milieu	Begrijpen van regenpatronen, erosie, biodiversiteit
Civiele techniek	Waterbeheer, infrastructuur
Gezondheid	Effecten op bewoners
Economie	Kosten, investeringen, toerisme
Bestuur & beleid	Wetgeving en ruimtelijke ordening
Sociale wetenschappen	Gedrag, participatie, draagvlak
Onderwijs	Bewustwording en capaciteitsopbouw

EEN SYSTEEMOPLOSSING

In plaats van alleen grotere rollen:

- ✓ Groene waterbuffers en wadi's
- ✓ Herstel van mangroven
- ✓ Klimaatbestendige wijkontwikkeling
- ✓ Participatie van bewoners
- ✓ Educatieprogramma's op scholen
- ✓ Monitoring met data en sensoren
- ✓ Nieuwe beleidsregels voor bouwen en wateropvang

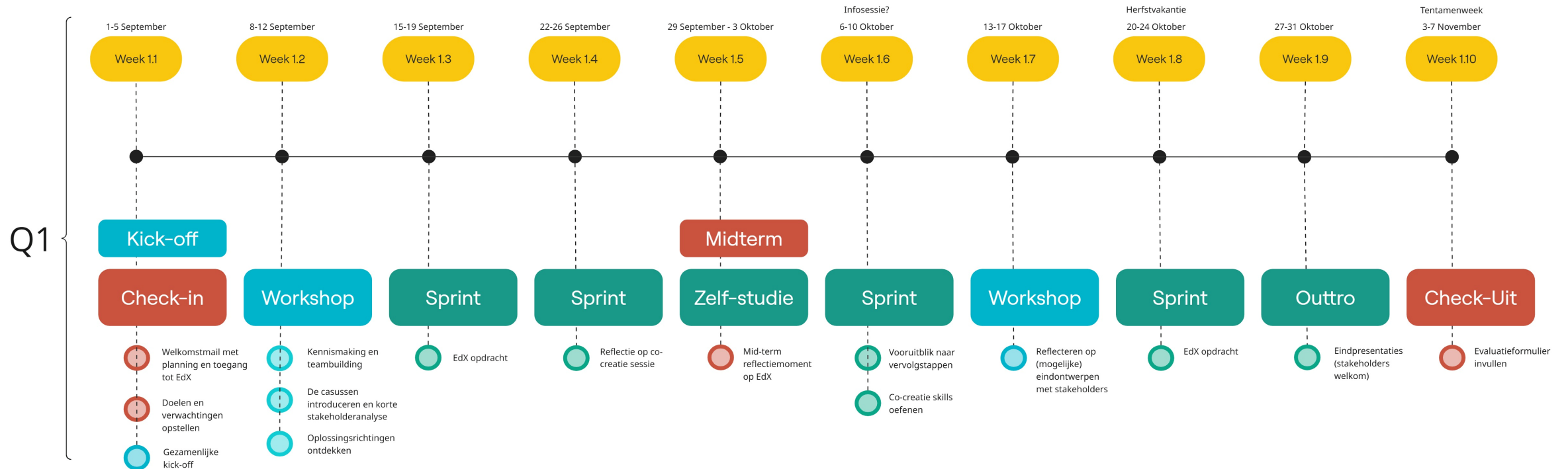


Core Learning Objectives:

- **Analysis:** Students analyze complex societal issues from multiple perspectives and formulate well-substantiated problem definitions.
- **Systems Thinking:** Students identify, analyze, and represent the interdependencies between subproblems and broader societal challenges, explicitly modeling these relationships to understand the system as a whole.
- **Technical knowledge and application:** Students apply technical and disciplinary knowledge in realistic societal contexts and learn to connect technical expertise to systems issues, innovation processes, and sustainable solutions.
- **Cross-Boundary Collaboration:** Students collaborate effectively in transdisciplinary teams and involve diverse non-academic stakeholders, transcending disciplinary and organizational boundaries.
- **Integration:** Students integrate diverse and evolving perspectives from the professional field into socially relevant interventions.
- **Reflection:** Students reflect on their own role, assumptions, and learning process while operating in open, uncertain, and constantly changing contexts.



Planning per Quarter





Analysis of Student Learning Outcomes

Learning Community Curaçao

What students learned in the Learning Community



Overall Conclusion

The LC in Curaçao fostered strong learning in intercultural competence, systems awareness, cross-boundary collaboration, contextual understanding, and stakeholder engagement.

Further improvements can strengthen interdisciplinary integration, technical depth, and project organization.

1 Working on System Challenges



What students learned

- Awareness of complex sustainability challenges
- Understanding of interconnected social, environmental, economic and technical factors
- Realization that solutions require more than technical fixes
- Exposure to open-ended and ambiguous real-world problems



Learning outcome

Students developed an emerging systems perspective and learned to consider multiple dimensions and dependencies in real-world sustainability challenges.

2 Cross-Boundary Collaboration



What students learned

- Communicating across disciplines and backgrounds
- Adapting to different working styles
- Appreciating multiple perspectives
- Negotiating and aligning within diverse teams



Learning outcome

Students strengthened boundary-crossing competencies such as perspective taking, communication, negotiation and collaborative problem exploration.

3 Intercultural and Cultural Collaboration



What students learned

- Understanding Curaçaoan culture and working practices
- Adapting communication and collaboration styles
- Becoming more open-minded and culturally sensitive
- Experiencing different perspectives on sustainability and development



Learning outcome

Students developed intercultural communication skills, cultural sensitivity, adaptability, and global citizenship competencies.

4 Connecting to the Local Context



What students learned

- Importance of understanding local realities
- Learning from local organizations and communities
- Recognizing local assets, constraints and opportunities
- Understanding the influence of geography, culture, infrastructure and governance



Learning outcome

Students developed contextual intelligence and learned to design solutions that are relevant, feasible and meaningful in local contexts.

5 Stakeholder Management and Engagement



What students learned

- Identifying and engaging real stakeholders
- Understanding different interests, priorities and expectations
- Communicating and building relationships with stakeholders
- Dealing with information gaps and expectation management



Learning outcome

Students gained initial competencies in stakeholder identification, communication, expectation management and translating needs into project outcomes.

6 Technical Depth and Academic Learning



What students learned

- Exposure to real-world challenges
- Some cross-disciplinary insights
- Limitations of their own technical knowledge in complex contexts
- Need for stronger integration of technical and disciplinary expertise



Learning outcome

Students recognized the need for deeper technical integration and the value of combining disciplinary knowledge within systemic solutions.



Key Takeaway

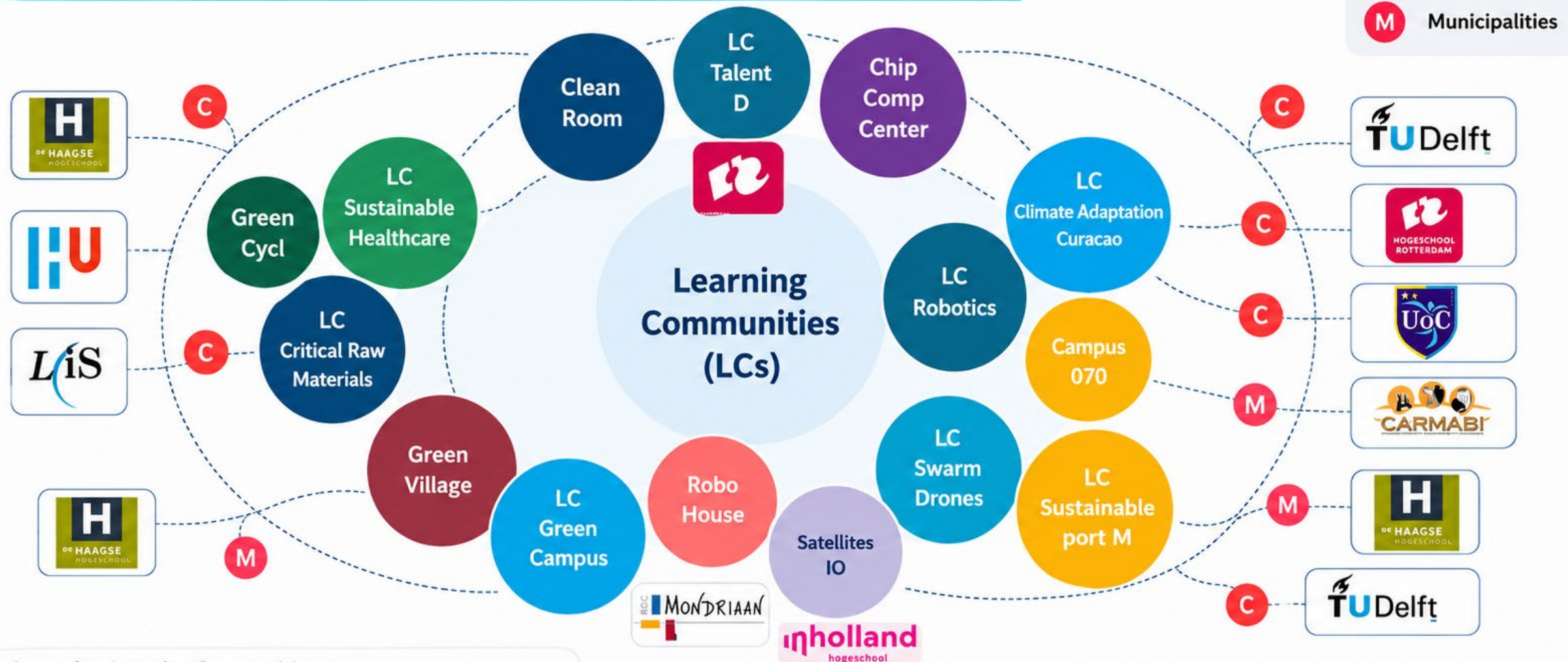
The Learning Community in Curaçao contributed significantly to the development of future-oriented professionals. Students learned to navigate complexity, collaborate across boundaries, engage with stakeholders, and understand local contexts—key competencies for addressing sustainability challenges.



Implications for Future Learning Communities

- Clearer project goals and expectations
- Stronger interdisciplinary team composition and integration
- More relevant and embedded workshops
- Stronger communication and onboarding
- Structured reflection on learning outcomes and impact

Learning Communities & Communities in Ecosystem



Legenda – Learning Communities

- Technology & Innovation
- Climate & Energy
- Community & Environment
- Health & Sustainability
- Ports & Infrastructure
- Cross-cutting / Enabling

Onderwijs & Onderzoek
Universiteiten, Hogescholen,
MBO & Onderzoeksinstituten

Studenten
MBO – HBO – WO
Multidisciplinair &
Transdisciplinair

Partners
Bedrijven, Overheden,
Maatschappelijke Organisaties,
Fieldlabs & Urban Labs

Quotes

HHS student: Het bekijken van een vraagstuk vanuit meerdere perspectieven heeft onze oplossing verrijkt!

MBO student: Ik keek eerst nogal op tegen de andere studenten maar ze bleken veel te hebben aan mijn kennis en ervaring. Ik werd gewaardeerd en ik heb ervaren dat we samen dingen beter maken als we samenwerken!

TUD student: Door samen te werken in een trans disciplinair team heb ik geleerd hoe unieke benaderingen van probleemoplossing innovatieve oplossingen kunnen creëren.

EUR student:
Het heeft me geleerd verschillende manieren van denken te waarderen, met technici te communiceren en kennis te combineren om gedeelde doelen te bereiken.

TUD student: LCs hebben me geleerd dat ik fouten kan maken en dat als ik er niet uitkom er altijd een andere route is die wel werkt.

TUD student: Door samen te werken met collega's uit verschillende disciplines werd het belang benadrukt om buiten de technische focus van de geomatica te stappen en rekening te houden met de praktische, economische en ecologische beperkingen

Onderzoeksteam Learning Communities



Prof. dr. ir. Arno Smets (**EWI**)

Prof. Dr. Tamara Metze (**TBM**)

Prof. dr. Elisabeth (Liesbeth) Echteld
(**UCRI/UoC**)

Dr. Ir. Katrina (K.G.) Heijne (**IO**)

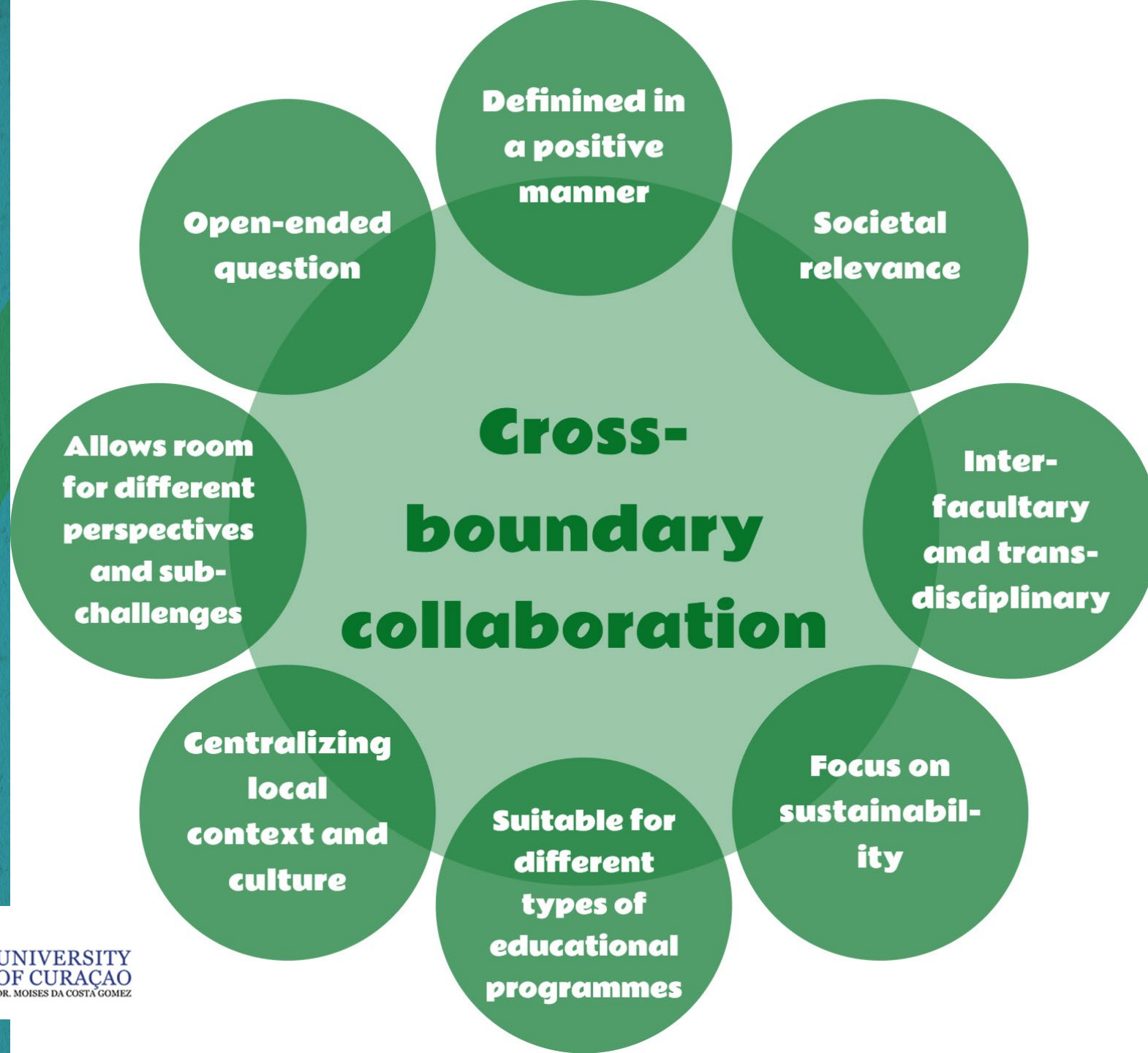
Dr. Ir Juliette Cortés Arévalo (**TBM**)

Ir. Ergün Erkoçu (**UoC/UCRI**)

Dr. Ellen Sjoer (**HHS**)

Dr. Nico Persoon (**ROC Mondriaan**)

Criteria for a cross-boundary challenge



Didactic and holistisc education approach

- Focus on *problem-finding*
- *Verantwoordelijkheid* van onderzoek ligt bij de *student*
- Student leert zijn eigen interesse en *talenten* ontwikkelen
- Onderzoek en wordt zich bewust van de breedte van het *topic* over *eigen studie-domein* heen
- Leert *omgaan met onzekerheden*
- *Fouten maken mag*

