

Learning climate change competencies in education

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1. INAR EduTeam
2. Climate change competencies
3. Learning of the competencies
4. Climate University
5. References



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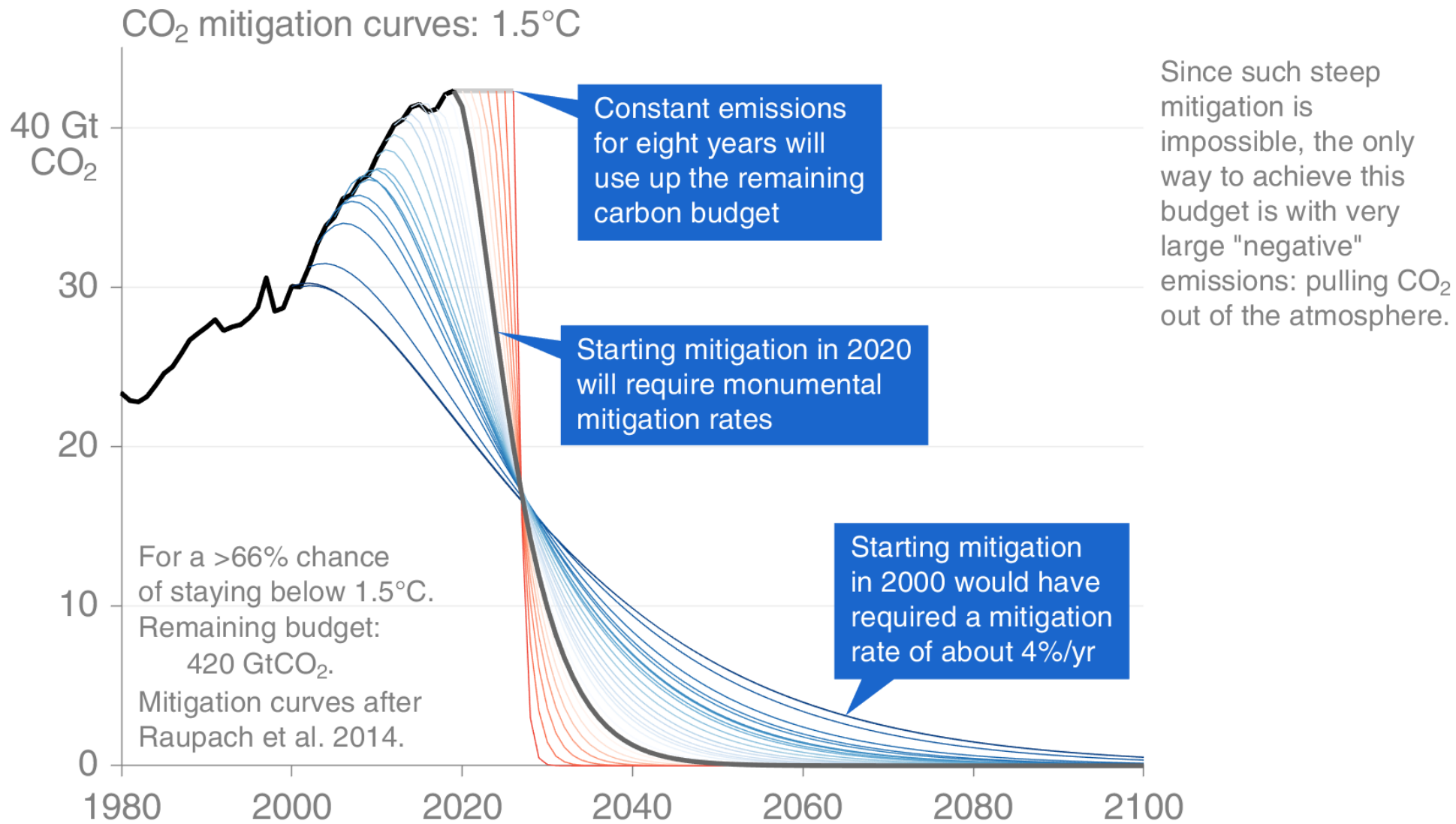
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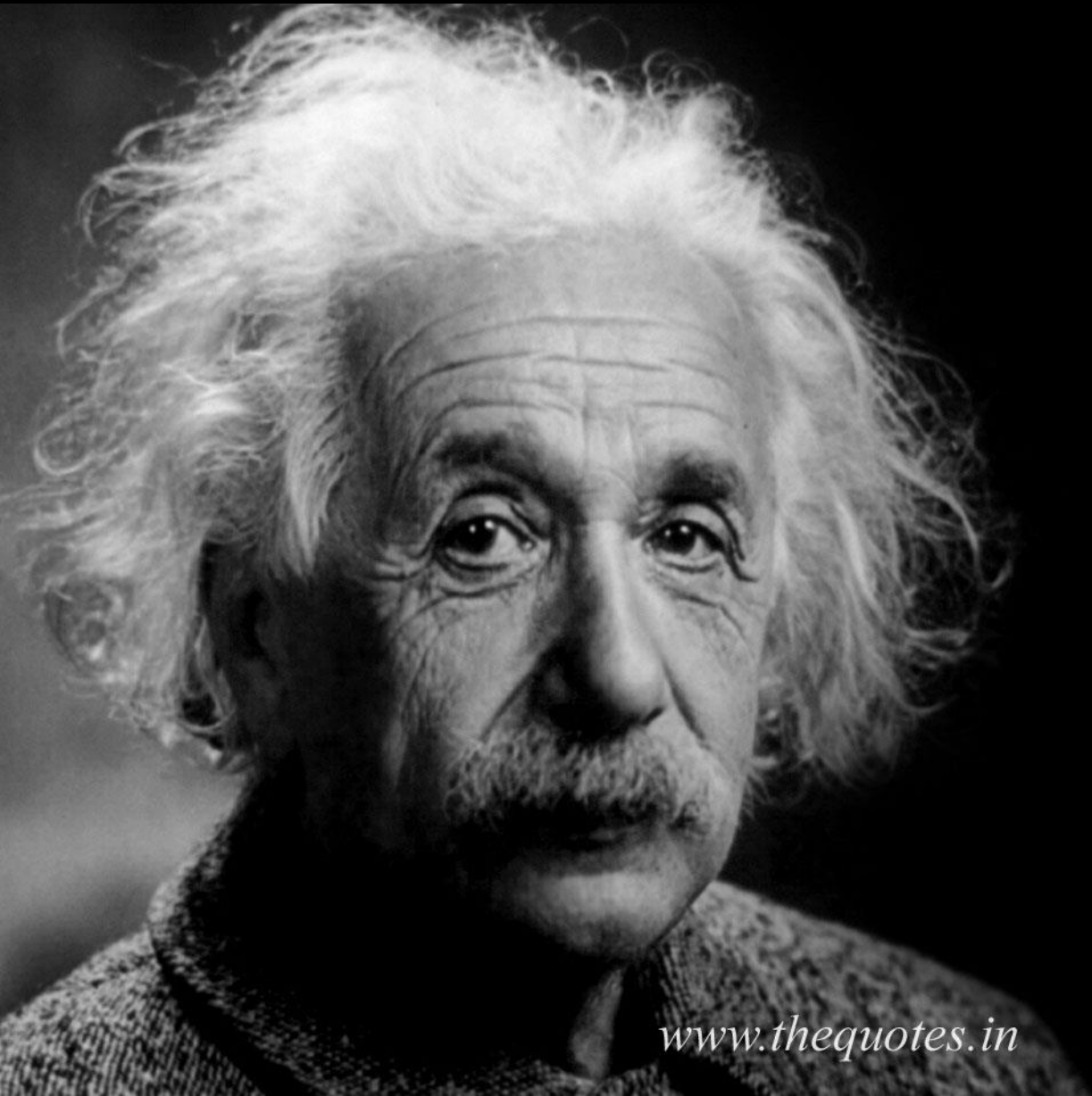
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We cannot solve our problems
with the same thinking we used
when we created them.

Albert Einstein

www.thequotes.in

Society needs experts with climate change competencies – what is the role of higher education in atmospheric and Earth system sciences?

Riuttanen, L., Ruuskanen, T., Äijälä, M., & Lauri, A. (2021). Society needs experts with climate change competencies—what is the role of higher education in atmospheric and Earth system sciences?. *Tellus B: Chemical and Physical Meteorology*, 73(1), 1-14.

Competency = knowledge + skills/abilities
+ attitudes + context + purpose

General academic competencies

e.g. Tuononen et al., 2019

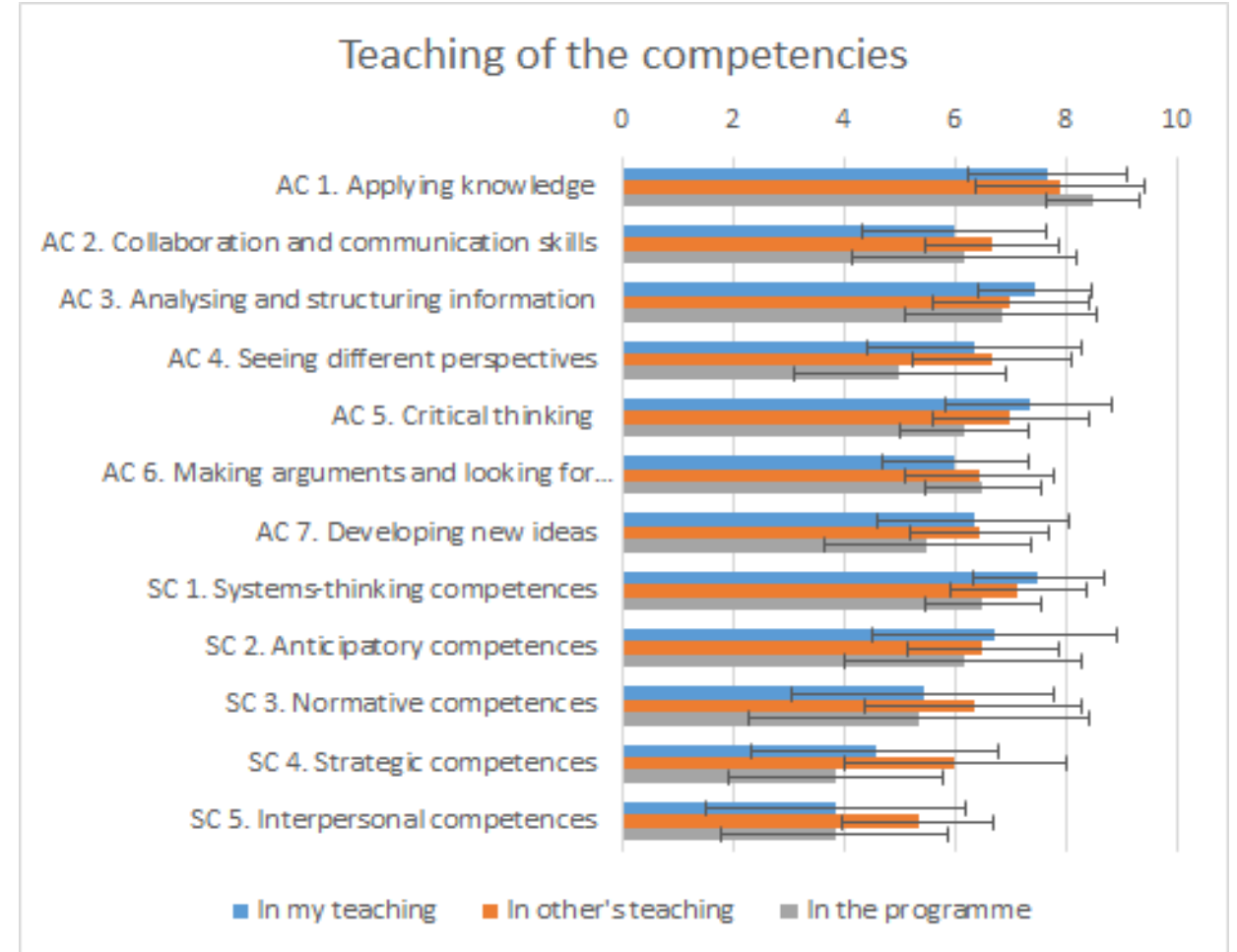
1. applying knowledge
2. collaboration and communication skills
3. analysing and structuring information
4. seeing different perspectives
5. critical thinking
6. making arguments and looking for solutions
7. developing new ideas

Competencies of sustainability

Wiek et al. 2011

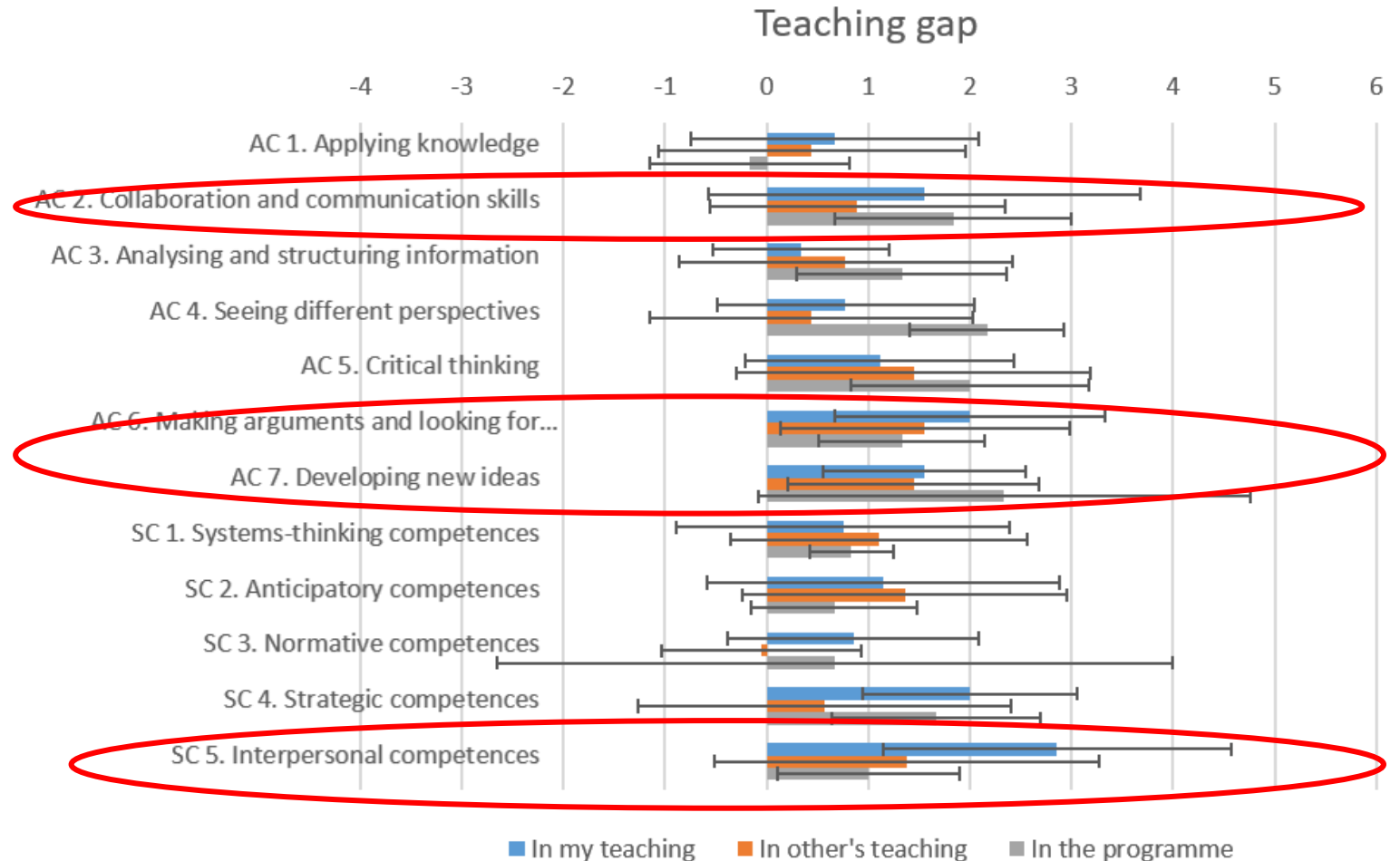
1. systems-thinking competency
2. anticipatory competency
3. normative competency
4. strategic competency
5. interpersonal competency

- Survey to teachers and programmes
 - ABS teacher network
 - EUROFLUX network
- 17 educational programmes websites
- 9+6 answers from 7 countries
- 5 interviews



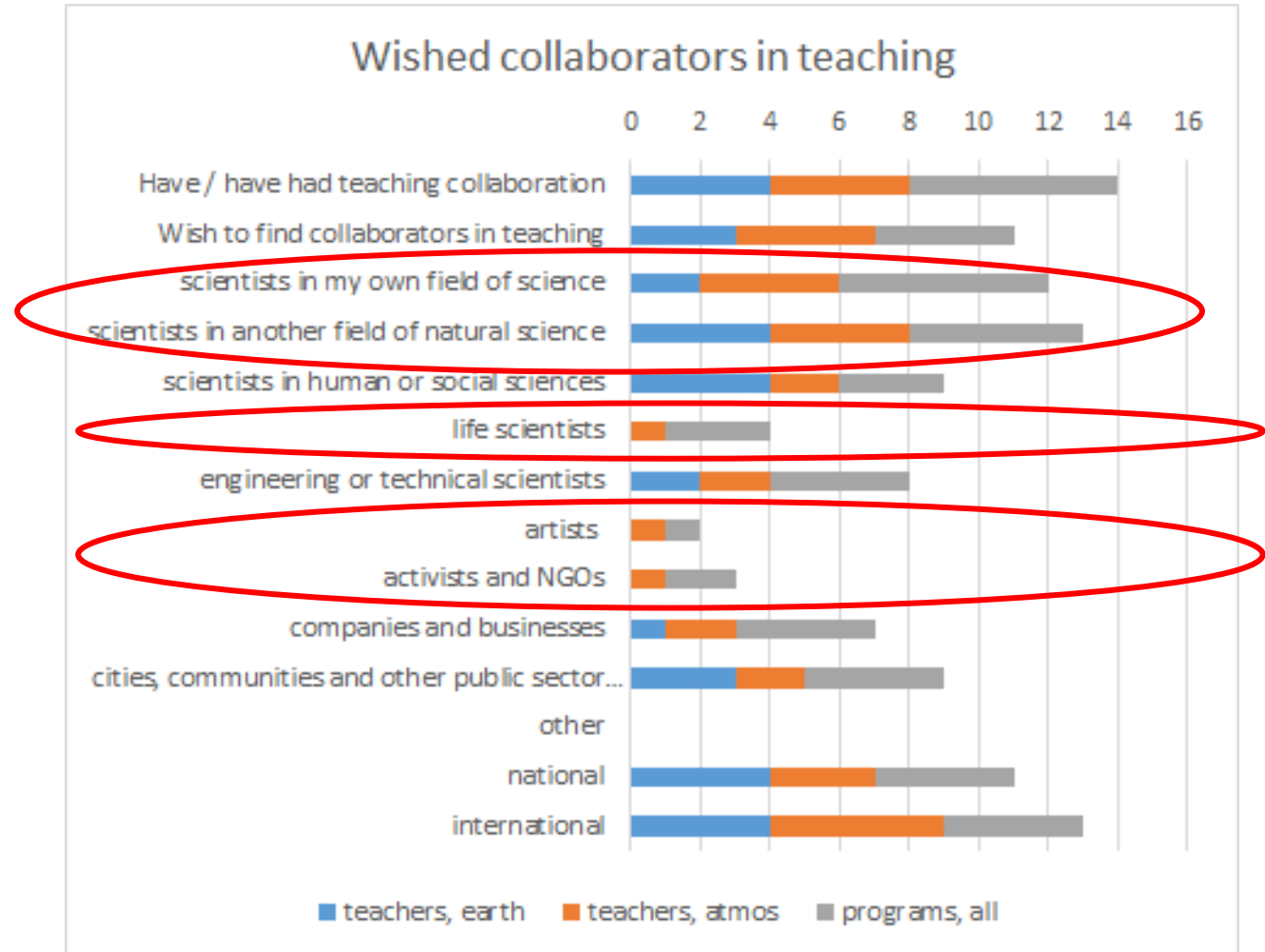
Teaching gap

Teaching gap
=
[importance – teaching]



Teaching collaboration

- All programs had teaching collaboration
- Wished for:
 - Natural scientists
 - Scientists of the own field
- Not wished:
 - Artists
 - Activists / NGOs
 - Life scientists



Conclusions

- General academic competencies were more familiar than sustainability competencies.
- Atmospheric and Earth system scientists do not see themselves as climate change experts.
- → **Need to define climate change competencies.**

Open questions

- What are the competencies we need to tackle the climate change?
- How to teach them?
- Who is a climate change expert?
- Why do (atmospheric) scientists hesitate in taking part in the societal discussion?
- What kind of collaboration we need for effective climate action?



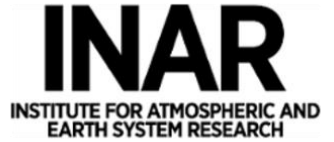
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ACADEMY OF FINLAND



FINNISH METEOROLOGICAL
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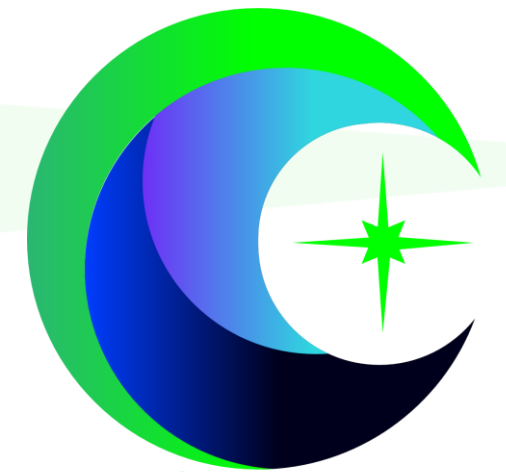


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Learning of the competencies of effective climate change mitigation and adaptation in the education system

ACADEMY OF FINLAND 2021-2024



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www.climateuniversity.fi

Education is the key if we want to respond to the challenges of climate change and the sustainability crisis and build a society that is resilient and innovative in the coming changes.

#ClimateUniversity



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References

Riuttanen, L., Ruuskanen, T., Äijälä M. and Lauri, K.A. (2021). Society needs experts with climate change competencies—what is the role of higher education in atmospheric and Earth system sciences?. *Tellus B: Chemical and Physical Meteorology*, 73(1), 1-14.

Tuononen, T., Parpala, A., and Lindblom-Ylänne, S. (2019). Complex interrelations between academic competencies and students' approaches to learning—mixed-methods study. *Journal of Further and Higher Education*, 1-18.

Wiek, A., Withycombe, L. and Redman, C. L. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability science*, 6(2), 203-218.

Websites

Climate University: www.climateuniversity.fi;
<https://blogs.helsinki.fi/climateuniversity/>

INAR EduTeam: <https://blogs.helsinki.fi/edu-team/>

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