



Asking those who feel it - indigenous  
knowledge on climate risks in  
mountains

Transdisciplinary teaching to  
enhance student engagement

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# 2 Courses as part of the Global Awareness Program

Local and Indigenous knowledge (ILK) on climate change

History of dealing with ILK in conventional science



Presence in global conventions today



Examples of best/worst practices



Climate risk in vulnerable mountain regions of the world

State of knowledge on risks, methods and data



Disaster Risk Reduction in research and practice



Science to policy engagements in mountain regions on climate risks



**Serious Game**

COP like negotiations specifically on mountain issues



External speakers

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**Serious Game**

COP like negotiations specifically on mountain issues

**External speakers**

breakout discussions

student presentations as teams

**challenge** with **personal** experience and academic knowledge

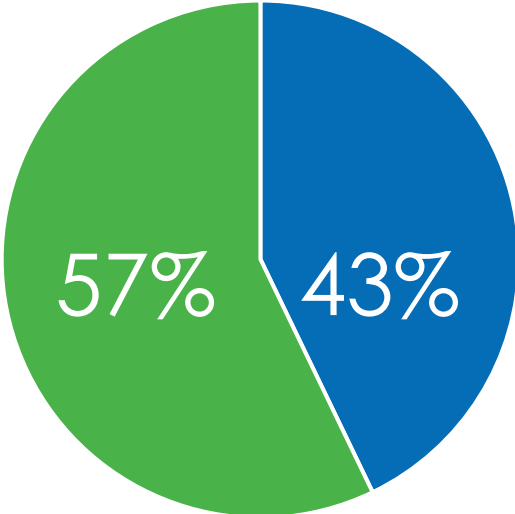
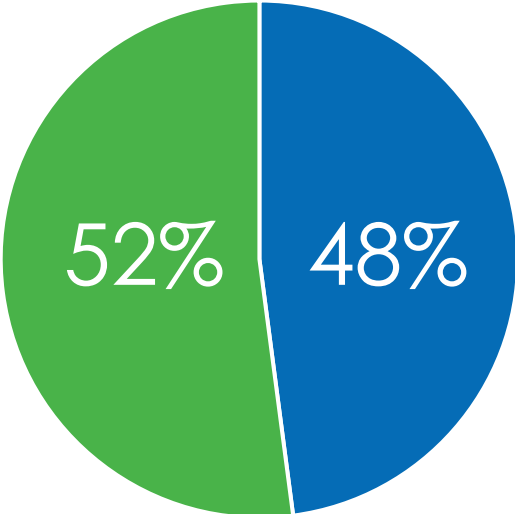
# Interdisciplinary student body (BSc + MSc)

Social Sciences\*

Natural Sciences#

ILK - 49 students (3 years)

Mountain Risks - 35 students (2 years)



## International

German

Peruvian

Chilean

Kyrgyz

Chinese

US American

\* includes Law, # includes Medicine

# Student progress in confidence

Self evaluation before and after the course on a scale of 1-5

Self scoring <b>before</b> and <b>after</b> the course	ILK (n = 49)	Mountain Risks (n = 35)
How familiar are you with the course topic?	<b>2.3</b> ( $\sigma$ 0.9) to <b>3.5</b> ( $\sigma$ 0.9)	<b>2.5</b> ( $\sigma$ 1.2) to <b>3.8</b> ( $\sigma$ 0.7)
How confident are you in explaining the topic to someone else?	<b>2.0</b> ( $\sigma$ 1.9) to <b>3.9</b> ( $\sigma$ 0.7)	<b>1.9</b> ( $\sigma$ 1.0) to <b>4.1</b> ( $\sigma$ 0.7)
How relevant is this topic in your field of study?	<b>3.3</b> ( $\sigma$ 1.4) to <b>3.7</b> ( $\sigma$ 1.2)	<b>2.6</b> ( $\sigma$ 1.2) to <b>2.9</b> ( $\sigma$ 1.5)



Global Awareness  
Education at Uni Tübingen



Teaching slides

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# The case for external speakers

- Early career scientists (3 MSc, 2 PhD, 2 PostDocs, 1 Assistant Professor) allowing for students to relate
- Speakers either working with Indigenous knowledge holders (3, allowing for reflections on what is my role and responsibility as an 'outsider') or being Indigenous knowledge holders themselves (5)
- Students appreciated to be challenged with different approaches to working with ILK, speakers at times more relatable than the main lecturer
- Students were encouraged to challenge what they learned during the course

# Serious Game

- Students were provided country profiles and could choose roles of different stakeholders
- Game built on a Serious Game played at UN HQ in Vienna with actual stakeholders in 2022 (<https://mountains-connect.org/>)
- Round 1: Negotiations within the country
- Round 2: Negotiations across interest groups
- Round 3: Plenary Discussion

## Country Profile Peru

### Governance:

Unitary state with multi-party system

28% covered in mountains

34 million inhabitants

GDP per capita 7125 USD

HDI 0.762

Main exports: minerals, textiles

### Delegation:

Civil society representation: representative of indigenous communities

Ministerial representation: minister for natural resources

Advocacy representation: environmental lawyer

Academic representation: professor in Environmental Humanities

International agency: FAO representative

### general hints:

Peru has a strong history in including Indigenous knowledge in addressing climate change and mountain risks (see e.g. <https://lcipp.unfccc.int/>) and has recently seen a climate lawsuit against a German company regarding adverse impacts of actions of German companies.

### literature:

civil society:

<https://www.euroclima.org/en/recent-events/en-news/1479-peru-s-indigenous-peoples-platform-for-climate-change-ppicc-held-a-meeting-to-evaluate-its-first-year-of-operation>

<https://iopscience.iop.org/article/10.1088/1748-9326/ac5271/meta>

ministry:

[https://www.researchgate.net/publication/269775984\\_River\\_Transport\\_of\\_Mercury\\_from\\_Artisanal\\_and\\_Small-Scale\\_Gold\\_Mining\\_and\\_Risks\\_for\\_Dietary\\_Mercury\\_Exposure\\_in\\_Madre\\_de\\_Dios\\_Peru](https://www.researchgate.net/publication/269775984_River_Transport_of_Mercury_from_Artisanal_and_Small-Scale_Gold_Mining_and_Risks_for_Dietary_Mercury_Exposure_in_Madre_de_Dios_Peru)

[https://link.springer.com/chapter/10.1007/978-3-319-72026-5\\_20](https://link.springer.com/chapter/10.1007/978-3-319-72026-5_20)

advocacy: [https://link.springer.com/chapter/10.1007/978-3-319-72026-5\\_20](https://link.springer.com/chapter/10.1007/978-3-319-72026-5_20)

academia: <https://nhess.copernicus.org/articles/13/1551/2013/>

# Serious Game

- Students were challenged to take principled stands in their roles and not shy away from conflict, getting them out of their shell, resulting in game scenarios they described as a fun experience
- Students had to apply the knowledge from the course directly to win arguments, resulting in concepts being questioned and eventually better understood
- Students were encouraged to play roles they were familiar with from the news or their own backgrounds and to take contrarian positions to their own convictions
- Students were encouraged to think in real tangible, politically viable outcomes rather than in purely scientifically most favored outcomes of negotiations

# Why would students choose such courses?

Out of 10 – 15 students each course only 1 – 5 afterwards asked specific questions that pointed to integrating that into required course work (e.g. thesis)

Most students chose it to challenge themselves to critical reflections on a topic of personal interest but generally outside their own discipline (e.g. only 50 % of students saw the mountain risks course relevant for their course of study, while the course required full attendance and active participation)

Course allowed high achievers e.g. in anthropology, a background with generally better training on Indigeneity, to challenge the lecturer, which many students enjoyed doing and allowed them to gain confidence in their arguments