

# IGU-CGE Oxford Conference

5<sup>th</sup> – 7<sup>th</sup> July 2023



# IGU-CGE 2023: Oxford Conference

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## Welcome to IGU-CGE Oxford Conference 2023!

On behalf of the Geography Education Research Collective (GEReCo) and the conference organising committee I am delighted to welcome you to the International Geographical Union Commission on Geography Education's Oxford Conference 2023! This marks the first time that the IGU-CGE conference has been held in Oxford, and we are thrilled to host what promises to be a fascinating and stimulating time together. It has already been such a pleasure to review the many brilliant proposals under the conference theme *Geography Education for the Anthropocene*: work that speaks to the significance of this epoch that is so deeply riven across racialised, gendered and classed lines. Geography education has an important role to play in forging more sustainable and equitable futures addressing these inequalities, and across the conference there will be many opportunities to critically explore these themes. To highlight just two such opportunities: we are honoured to be joined by Dr Amber Murrey from the School of Geography and the Environment at Oxford to deliver the after-dinner keynote on *Pedagogical Disobedience for the Anthropocene*; and Thursday morning then kicks off with Professor Peter Kraftl's keynote on *Spaces of Childhood and Education in the Anthropocene*.

Climate plays a central role in ideas about the Anthropocene, and while increasingly complex algorithms model future predictions, carefully collected weather data over long periods of time continues to play a fundamental role in our understandings of the Anthropocene. Oxford is home to the longest unbroken record of daily weather data in the UK (including daily air temperature records beginning in November 1813): this weather station, and the building – the Radcliffe Observatory - in whose grounds it sits is one place that might be worth a visit during your stay. Oxford's Natural History Museum is currently displaying a special *Connected Planet Exhibition* that might also be of interest (entry free, and online version of the exhibition is here: <https://www.oumnh.ox.ac.uk/connected-planet-exhibition-online>), and there are further suggested places of interest towards the end of this booklet. There will also be an opportunity to explore more of Oxford during the (free and optional) fieldtrip on Friday, beginning with Uncomfortable Oxford's walking tour with a difference, followed by an informal lunch (to be paid for individually), and then time to visit some of Oxford's museums. But whatever your journey through the conference and through Oxford, may I once again thank you for being part of our time together and our collective endeavours to better understand and develop Geography Education for the Anthropocene.

**Dr Steve Puttick**, Associate Professor of Teacher Education, Fellow of St Anne's College, University of Oxford and Chair of GEReCo.

### Conference organising committee

**Dr Lauren Hammond**, Lecturer in Teacher Education, University of Edinburgh and Honorary Lecturer, IOE, UCL's Faculty of Education and Society.

**Grace Healy**, Education Director (Secondary), David Ross Education Trust, Honorary Research Fellow, University of Oxford and PhD student, IOE, UCL's Faculty of Education and Society.

**Dr David Mitchell**, Associate Professor in Geography Education, IOE, UCL's Faculty of Education and Society.

**Dr Steve Puttick**, Associate Professor in Teacher Education, University of Oxford and Chair of the Geography Education Research Collective (GEReCo).

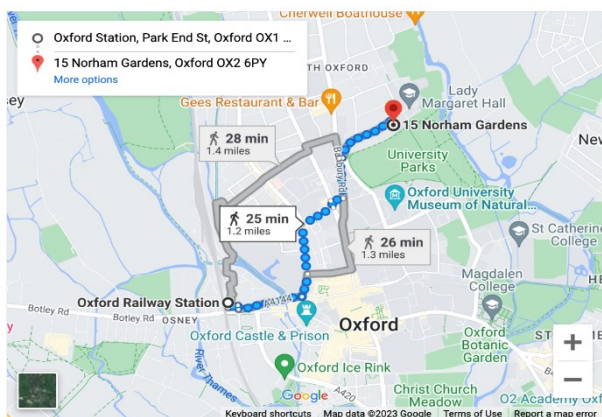
**Dr Emma Rawlings Smith**, Departmental Lecturer in Geography Education, University of Oxford.

## The Department of Education, University of Oxford

Welcome to the Department of Education. We are centrally located in Oxford at 15 Norham Gardens, Oxford, OX2 6PY. The department is 1.2 miles (a 25-minute walk) from Oxford Station.

[Google maps](#)

All rooms in the department for the conference are wheelchair accessible and there is a multi-faith reflection room.



### University website information

Department of Education, <https://www.education.ox.ac.uk>

Visiting Oxford information, available on the University of Oxford [website](#).

Getting to Oxford information, available on the University of Oxford [website](#).

Access Guide for the Department of Education, available on the [website](#).

### Travel by train

Direct services run from [London Paddington](#) and [London Marylebone](#). Other services operate from the north via Birmingham New Street; from the south via Reading or Didcot. For details and to plan your journey, see [National Rail Enquiries](#).

### Travel from London airports

From London Heathrow and Gatwick airports, take [The Airline coach service](#) which runs 24 hours a day. You can also get to Oxford by train from Heathrow via London, and from Gatwick via Reading.

## IGU-CGE Oxford Conference Code of Conduct

This Code of Conduct sets the standard of conduct expected of all participants and applies to all participants, including in-person and virtual attendees, speakers and volunteers.

The IGU-CGE Oxford Conference is intended to be a safe, welcoming educational space for learning and sharing, guided by the values of diversity, equity, and inclusion. We aim to provide the opportunity for attendees to benefit from the conference and advance the field of geography education. We recognise the shared responsibility to create and maintain this safe and welcoming space for the benefit of all.

Behaviour that is expected and encouraged:

- Be respectful and treat everyone equally.
- Listen to everyone's views and engage constructively with them.
- Be kind and conscious of how your words might unintentionally harm others.
- Be aware of privilege and power dynamics. If you find you are talking a lot, consider making space for others to speak.

Discrimination, harassment, bullying and behaviours that are patronising have no place at the conference. If any improper or unwelcome conduct is reported to a member of the organising committee, appropriate action will be taken.



## Notes for presenters and session chairs

**Presenters** - please ensure that you bring your presentation on a USB and upload it to the desktop of the computer in the room in which you are presenting during the break before your session. You should ensure that your presentation is uploaded at least 10 minutes before the session begins and introduce yourself to the session chair. All presentations apart from the convened session are 15 minutes in length.

If you are presenting virtually, please ensure that you are in the relevant online space 10 minutes before the start of the session. Please introduce yourself to the session chair and alert them to any issues with the technology.

**Session chairs** – please ensure that you are in the relevant room at least 10 minutes before the session begins. It is your responsibility to ensure that the session runs to time and that discussion remains respectful. Introduce yourself to the authors prior to the session and ensure that you are aware of their name (and how to pronounce it correctly), and the title of their paper and any affiliations, as you will introduce each paper. Please ensure that you also introduce yourself to any virtual speakers and check that the technology is working.

You will be provided with ‘5 minutes remaining’, ‘1 minute remaining’ and ‘please stop’ cards which should be left in the room for the next session. The format of each session with 4 papers is:

- Introduce the session (2 minutes)
- Paper 1 (15 minutes), followed by 5 minutes of question and answer. This format is then repeated for papers 2, 3 and 4.
- Opportunity for further question and answer and/or to collaboratively discuss themes that emerge from the session (8 minutes or time remaining).

If you encounter any issues, please do not hesitate to contact one of the organising committee who will be able to support you.

**Posters** - all posters should be prepared in advance and brought to the conference by authors. Unfortunately, we are not able to receive any posters in advance and we do not have facilities to support digital posters or printing on site. The poster can be landscape or portrait and should be no larger than A0 paper size. We will provide you with materials to mount your poster at the conference. Where possible, we encourage authors to stand with their posters to discuss them with colleagues during the morning coffee breaks on Wednesday 5<sup>th</sup> and Thursday 6<sup>th</sup> July.

## Programme overview

### Tuesday 4th July 2023

**Optional** early career event organised by the IGU's Early Career Network beginning at 3pm. The event has been organised by Melissa Hanke and Hermione Xin Miao, and you can contact Hermione at [xin.miao@stir.ac.uk](mailto:xin.miao@stir.ac.uk) if you would like further information, to join the network or the event.

### Wednesday 5<sup>th</sup> July 2023

08:30 – 08:50	<b>Introductions (Seminar room A)</b>		
<b>Movement to sessions</b>			
09:00 – 10:30	Session 1a (Seminar room A)	Session 1b (Seminar room G/H)	
<b>Coffee/tea</b>			
11:00 – 12:30	Session 2a (Seminar room A)	Session 2b (Seminar room G/H)	Session 2c (Seminar room B)
<b>Lunch</b>			
13:30 – 15:00	Session 3a (Seminar room A)	Session 3b (Seminar room G/H)	Session 3c (Seminar room B)
<b>Coffee/tea</b>			
15:30 - 17:00	Session 4a (Seminar room A)	Session 4b (Seminar room G/H)	Session 4c (Seminar room B)
<b>Conference meal and after dinner speaker</b>			

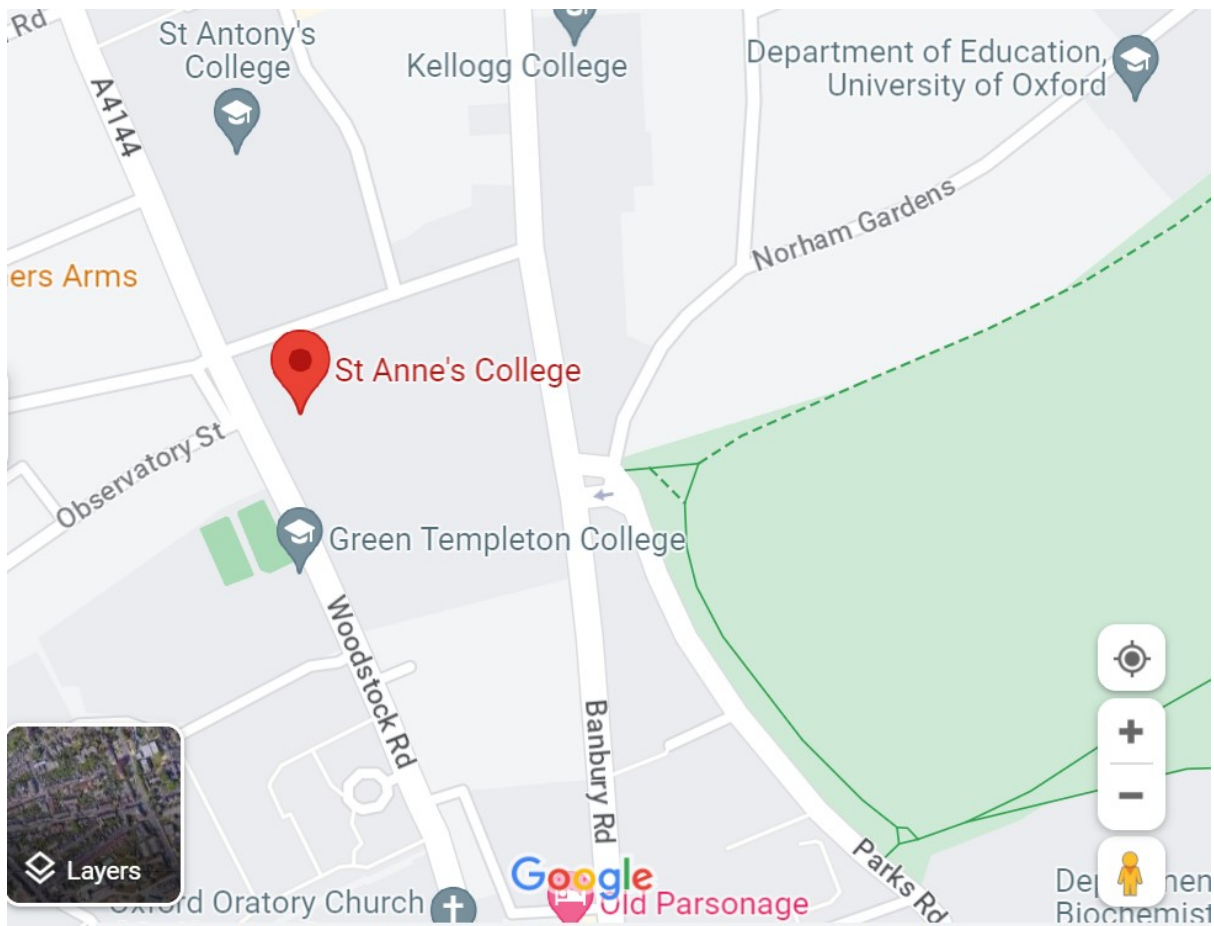
## Thursday 6<sup>th</sup> July 2023

09:00 – 10:30	<b>Keynote and discussions (Seminar room A)</b>	
<b>Coffee/tea</b>		
11:00 - 12:30	Session 5a (Seminar room A)	Session 5b (Seminar room G/H)
<b>Lunch</b>		
13:30 – 15:00	Session 6a (Seminar room A)	Session 6b (Seminar room G/H)
<b>Coffee/tea</b>		
15:30 – 17:00	Session 7a (Seminar room A)	Session 7b (Seminar room G/H)



## Wednesday 5<sup>th</sup> July 2023 Conference Meal

The conference meal will be held at St Anne's College; drinks at 6pm, dinner at 6:30pm. The closest entrance to the department is on the Banbury Road, but needs a fob to access. We will be at this Banbury Road entrance from 5:50-6pm to let delegates in. Outside of this time please use the main college entrance from the Woodstock Road.



St Anne's College website: [St Anne's College, Oxford - Forward looking & Outward facing](#)

## Friday 7<sup>th</sup> July 2023: Optional fieldtrip, Uncomfortable Oxford

Meet outside the Department for Education, 10am

Join us for this guided walking tour with a difference: discover another side to the city of dreaming spires. Founded in 2018 by two Oxford students, Uncomfortable Oxford tours are dedicated to diversifying the stories told about Oxford: going beyond traditional narratives about the city to highlight histories of race, gender, class, inequality, and legacies of empire.

There is no additional cost for the fieldtrip. Do wear comfortable shoes, and please let the organising committee know if you have any mobility needs.

After the walking tour there will be an option to go for lunch together (to be paid for individually), followed by time to visit some of Oxford's museums (including the Natural History Museum and the Ashmolean).

### **Posters**

Throughout the conference there will be a poster display in the department café area (Pring's). The author(s) of the posters will be available to talk to their posters during the morning coffee sessions.

## Overview of sessions

**Wednesday 5<sup>th</sup> July 2023**

**Introductions: 08:30-08:50**

**Dr Steve Puttick** on behalf of the Geography Education Research Collective (GEReCo) and conference organising committee.

**Dr Gillian Kidman** on behalf of IGU-CGE

**Session 1: 09:00-10:30**

<b>Session 1a: Ethics, people and place in geography education</b> <b>Chair:</b> Melanie Haltenberger	
1	<b>Geography Education and Responsibility – The Concept of Responsibility as Orientation for Ethical Questions of the Anthropocene in Geography Lessons</b> Jochen Laub
2	<b>Climate Change Education in Places</b> Steve Puttick
3	<b>Moral and ethical dilemmas of geographical education in the Anthropocene: a pedagogical provocation</b> Niranjan Casinader
4	<b>Linking Geography of Sustainable Consumption to Education for Sustainability</b> Ana Espinosa Seguí ( <a href="#">virtual attendee</a> )

<b>Session 1b: Convened sessions</b> <b>Chair:</b> Christian Wittlich	
1 (45 minutes)	<b>Creative Pedagogies for a Post-Extractive Transition</b> Daniel Selwyn
2 (45 minutes)	<b>Engaging in Research Excellence: Methodologies for the New Millennium</b> Gillian Kidman

## Session 2: 11:00-12:30

<b>Session 2a: Textbooks, resources and pedagogies in, and for, the Anthropocene</b>	
<b>Chair: Emma Till</b>	
1	<b>Development of climate change discourse in Finnish upper secondary geography textbooks and curricula 1985–2023</b> Paavo Ikonen
2	<b>Dimensions of Diversity in Geography Textbooks</b> Leoni Doerfel and Catrina Peter
3	<b>Visuals of Climate Change in School Textbooks</b> Mareike Schauss
4	<b>Inquiry-Based Learning on Climate Change: Research-Based Design of a Learning Environment for Upper Secondary Education</b> Sebastian Brumann

<b>Session 2b: Pedagogies of hope, courage and resilience</b>	
<b>Chair: Tine Béneker</b>	
1	<b>Pedagogies of courage: exploring the Symbiocene</b> Tom Wils and Joost van Damme
2	<b>Grounds for hope in the Anthropocene: a curriculum necessity?</b> David Alcock
3	<b>Futuring pedagogies in secondary geography education</b> Tim Favier
4	<b>Critical Reflections on Smart Mobility - Raising Awareness of Teachers and Students for the Social Implications of a Digital Mobility Transition</b> Jonas Koch, Tomke van Hove and Christiane Meyer

<b>Session 2c: Perspectives on geography education and education for sustainability</b>	
<b>Chair: Fabian Pettig</b>	
1	<b>Young People's Perspectives on Implementing the Sustainable Development Goals – Influences and Pedagogical Approaches</b> Lydia Heilen
2	<b>Towards climate-capabilities: developing a holistic understanding of climate change through geographical thinking</b> Yujing He
3	<b>Students' perceptions on the relevance of geography</b> Noora Kivikko
4	<b>Image of Geography from the perception of students: what influences it and its consequences</b> Veronika Korvasová

### Session 3: 13:30-15:00

<b>Session 3a: The role and nature of national curricula in the Anthropocene</b>	
<b>Chair:</b> Chris Winter	
<b>1</b>	<b>How to achieve the continuity of geography curriculum in China?: Based on the analysis of curriculum standards</b> Rong Ding, Xin Yan and Yushan Duan
<b>2</b>	<b>Interpretation of the revision of the "Compulsory Education Geography Curriculum Standards (2022 Edition)"</b> Yushan Duan, Xin Yang, Rong Ding, Sheng Miao
<b>3</b>	<b>Two different worlds: A comparison of approaches to climate change education across the school geography curricula of the Netherlands and Spain</b> Yaël Duindam
<b>4</b>	<b>Geography for the Future? Power and knowledge in the Geography curriculum in Ireland</b> Susan Pike

<b>Session 3b: Geography teacher education: Engaging with the experiences and views of student teachers</b>	
<b>Chair:</b> Clinton van der Merwe	
<b>1</b>	<b>(Un-)certain knowledge of pre-service Geography teachers about climate change</b> Melissa Hanke, Hannes Schmalor and Sandra Sprenger
<b>2</b>	<b>A proposal of pre-service teachers' typology based on their conceptual understanding and certainty on the example of the concept of contours</b> Lenka Havelková and Martin Hanus
<b>3</b>	<b>Pre-service geography teachers' knowledge and practice for the Anthropocene</b> Eefje Smit
<b>4</b>	<b>Developing a critical eye for climate policy: Teachers-in-training analyse the Green Deal from behind a veil of ignorance</b> Joost van Damme and Tom Wils

<b>Session 3c: Primary geography for the Anthropocene</b>	
<b>Chair:</b> Maria Helena Esteves	
<b>1</b>	<b>Climate Geography Locally</b> Anthony Barlow
<b>2</b>	<b>Beliefs and pedagogical content knowledge of primary school teacher trainees: results of a quasi-experimental intervention study</b> Melanie Haltenberger
<b>3</b>	<b>Language in primary and secondary geography education: a systematic literature review of empirical geography education research</b> Neli Heidari, Markus Sebastian Feser, Nina Scholten, Knut Schwippert and Sandra Sprenger
<b>4</b>	<b>We could be climate change heroes: Exploring young children's ideas about the Anthropocene</b> Emma Till

## Session 4: 15:30-17:00

<b>Session 4a: The nature and value of geography teacher education in the Anthropocene</b>	
<b>Chair:</b> Emma Rawlings Smith	
<b>1</b>	<b>Teacher professional development for the Anthropocene – developing an online course for geography teachers</b> David Mitchell
<b>2</b>	<b>Building Futures - Teacher Education and the Anthropocene</b> Nicole Raschke, Pauline Mai, Pauline Hennig ( <b>virtual attendees</b> )
<b>3</b>	<b>Inspiring Education for Sustainability among Geography Teachers in Singapore</b> Puay Yin Lim and Melanie Lum
<b>4</b>	<b>Geography novice teachers' orientations towards climate change education in China</b> Xin Ai

<b>Session 4b: Considering tomorrow today: Futures thinking in geography education</b>	
<b>Chair:</b> Hermione Xin Miao	
<b>1</b>	<b>Dealing with Uncertainty in a Transformative Geography Education for the Anthropocene</b> Ulrike Ohl and Fabian Pettig
<b>2</b>	<b>Geography Education for the Anthropocene: Empowerment and Agency</b> Gillian Kidman
<b>3</b>	<b>The place of the Anthropocene in Portuguese school geography curricula: recent changes, old challenges</b> Maria Helena Esteves
<b>4</b>	<b>How do teachers develop map-interpretation skills in lower secondary students?</b> Kristýna Štolcová and Martin Hanus

<b>Session 4c: Citizenship, capabilities and voice in the Anthropocene</b>	
<b>Chair:</b> Benjamin Green	
<b>1</b>	<b>Which role does geography education play in educating citizens for the Anthropocene's era?</b> Marco Lupatini and Andrea Plata
<b>2</b>	<b>Children's rights in, and to, the city: Everyday life, education and empowerment in London and Glasgow</b> Lauren Hammond
<b>3</b>	<b>Post Growth in Geography Education from the Perspectives of Young People and Experts in the Context of Education for Sustainable Development (ESD)</b> Lara Brede, Christiane Meyer and Andreas Eberth
<b>4</b>	<b>Future Focused Teaching Orientations of Geography Teachers in Germany and The Netherlands</b> Tine Béneker and Uwe Krause

## **After dinner speaker**

**Keynote: Pedagogical Disobedience for the Anthropocene**

Dr Amber Murrey

**Chair:** Steve Puttick

**Thursday 6<sup>th</sup> July 2023**

**Session 1: 09:00-10:30**

**Keynote: Spaces of Childhood and Education in the Anthropocene**

Professor Peter Kraftl

**Chair:** Lauren Hammond



## Session 5: 11:00-12:30

<b>Session 5a: Decolonising geography: Voices, knowledges and positionality</b> Chair: Grace Healy	
1	<b>Decolonising the Anthropocene Era: A Muslim Geography Teacher's Perspective</b> Iram Sammar
2	<b>Decolonising the Anthropocene in school geography: Climate change and Cameroon</b> Christine Winter, Daniel Whittall, Alesha de Fonseca, Aliyou Haman, Manu Lekunze and Melis Cin
3	<b>The Rise of Ethnic Studies: Geography's Challenges and Opportunities</b> Kelly León
4	<b>Reconsidering East Asia's Traditional Geography for the Anthropocene</b> Hyunjin Kim

<b>Session 5b: Examining the purposes and nature of geographical education in the Anthropocene</b> Chair: Yushan Duan	
1	<b>Making connections between the Anthropocene, school geography and young people's career aspirations</b> Emma Rawlings Smith and Gemma Collins
2	<b>The Powerful Geography approach implemented at upper secondary school level in Switzerland: Potential and challenges</b> Regula Grob and Ariane Jedelhauser
3	<b>Analysing expert' views on a renewed Dutch geography curriculum through an Anthropocene lens</b> Gijs Van Campenhout, Tine Béneker and Rob van der Vaart
4	<b>Unravelling the Complexity of Teaching Geography Through a Professional Vision of Domain-Specific Deep Structures</b> Sebastian Streitberger

## Session 6: 13:30-15:00

<b>Session 6a: Knowledge production, sharing and exchange in geography education</b>	
Chair: Daniel Selwyn	
1	<b>Creating stories of educational change in and for geography: what can we learn from Bolivia and Peru?</b> Grace Healy, Nina Laurie and Jess Hope
2	<b>Extracurricular learning "next level": Using mobile digital game-based learning to teach complex content</b> Phillip Bengel
3	<b>Can interest in the human impact on the environment be promoted?</b> Martin Xaver Müller
4	<b>Geography Education through the Anthropocene Lens. Fostering Transformative Learning with Participatory Research in Middle Schools</b> Fabian Pettig and Daniela Lippe

<b>Session 6b: Digital geographies: Mobilities, mapping and participation in the Anthropocene</b>	
Chair: David Mitchell	
1	<b>Meta-analysis of the Impact of Geospatial Technologies on Learning Outcomes</b> Qianyi Ma
2	<b>Educating teachers to use GIS in teaching about climate change : A comparison between</b> Mary Fargher and Rafael de Miguel Gonzalez
3	<b>What factors play a role in the perceived limits of implementing GIS in education by geography teachers?</b> Veronika Bernhäuserová, Lenka Havelková and Martin Hanus
4	<b>Students' strategies of familiarization with a general-reference map of an unknown area</b> David Troksiar, Martin Hanus and Lenka Havelkova

## Session 7: 15:30-17:00

<b>Session 7a: Geography education, health and risk in the Anthropocene</b>	
<b>Chair:</b> Rafael de Miguel Gonzalez	
1	<b>Ecological Civilization: Engaging the complexity of ecological crisis</b> Benjamin Green
2	<b>Planetary Health (PH) in Geographical Teaching-Learning Settings?</b> Christian Wittlich, Hannah Lathan and Leif Mönter
3	<b>What might disaster risk reduction education look like in the Anthropocene: a vision based on the review of school geography curriculum in China</b> Qian Gong
4	<b>Conversations with geographers: do you teach the Anthropocene in your classes?</b> Hermione Xin Miao

<b>Session 7b: Making and shaping curriculum for the Anthropocene</b>	
<b>Chair:</b> Tom Wils	
1	<b>Imagining curriculum making scenarios for the human epoch</b> David Lambert
2	<b>Research on Curriculum Models for Interdisciplinary Thematic Learning in Compulsory Education - Taking "Global Climate Change" as an Example</b> Xin Yang, Yushan Duan and Rong Ding
3	<b>Teaching the Anthropocene in the Geography Curriculum Assessment and Policy Statement (CAPS) - myth or reality?</b> Clinton van der Merwe
4	<b>The reformed geography curriculum in the Republic of Croatia - is it ready for the Anthropocene?</b> Ivan Ivić

## Posters

Throughout the conference there will be a poster display in the café (Pring's). The author(s) of the posters will be available to talk to their posters during the morning coffee sessions.

Author(s)	Poster title
Tomáš Bendl, Lenka Havelková and Miroslav Marada	Preservice geography teachers' exposure to problem-solving and various teaching styles
Johannes Schulz	Climate Change Education through Inquiry-based Learning Promoting Action: A Systematic Literature
Marvin Schlamelcher, Janis Fögele and Nicoletta Bürger	Learning to argue for social digital participation with virtual excursions on climate change? A quasi-experimental intervention study to promote subject-specific and digitalisation-related competences
Christian Wittlich	Low-cost experiments and their potential for interdisciplinary climate education.
Petr Knecht, Michaela Spurna, Veronika Korvasova and Eduard Hofmann	Conceptions of geography teaching: Exploring the ecological validity of an assessment tool
Michaela Spurná and Petr Knecht	Investigating Who Teaches Geography Teachers: Exploring the Social Representation of Teachers and Teaching in Initial Teacher Education
Elisabeth Schuster	Primary School Students' Conceptions of Mobility in the Context of Education for Sustainable Development: A Systematic Literature Review
Hermione Xin Miao, Melissa Hanke, Gillian Kidman, Martin Hanus	Building and sustaining an <i>emerging scholar network</i> in geography education

## Session abstracts

### Session 1a: Ethics, people and place in geography education

#### **Geography Education and Responsibility – The Concept of Responsibility as Orientation for Ethical Questions of the Anthropocene in Geography Lessons**

**Jochen Laub**

Questions about dealing responsibly with people and the environment are of particular importance due to the enormous consequences of action in the Anthropocene and the global threat to (human) life (Jonas 1979). They are an elementary part of geography lessons. Education for sustainable development within the framework of the Anthropocene concept aims for individuals to assume responsibility for the environment and society, as is also emphasized in philosophical concepts of responsibility (Jonas 1979, Taylor 1997, Ahrend 2018). In teaching practice such concepts bring enormous didactic and pedagogical requirements, because questions of responsibility are complex in terms of content as well as ethical (Bögeholz & Barkmann 2005) and require a reflective handling of the ethical dimension of the human-environment relationship (Applis 2012; Felzmann & Laub 2019). From a pedagogical point of view, geography lessons are about asking the students to examine validity claims in relation to their own responsibility for „Mitwelt“ (Steiner 2016). Responsibility as a concept thus offers the potential to mediate between individual recognition of responsibility and its universal validity.

The contribution starts from a theoretical consideration of the concept of responsibility and then looks at its pedagogical and didactic potentials and challenges on three levels:

- Theoretical analysis of the concept of responsibility from a philosophical and educational perspective (regulative ethical thinking about responsibility - justice / mindfulness between relativism and universalism)
- Geographical significance of the responsibility relationships of students as an approach to geographical Issues (privatization of responsibility and overburdening of responsibility)
- pedagogical importance of integrating a concept of responsibility in dealing with ethical judgments in geography lessons (safe enough spaces / pedagogical antinomies)

#### **Climate Change Education in Places**

**Steve Puttick**

Climate Change is a global issue; maybe the archetypal global challenge. Yet climate change is experienced in local places, and knowledge about the climate is also produced (and known) in particular places: we come to know about the climate somewhere. In what ways is climate change education enacted differently across places? How do teachers engage with and speak about their teaching of climate change in the context of their particular place? What are the implications of these differences for the production of knowledge for teaching about climate change? Drawing on findings from the GCRF-funded project CCE Futures in India, and bringing this into dialogue with ongoing research in the Galápagos Islands and Azerbaijan, this paper will open up questions about scale, place and knowledge in geography education.

## **Moral and ethical dilemmas of geographical education in the Anthropocene: a pedagogical provocation**

**Niranjan Casinader**

Recent years have seen an increasing polarisation in human thought, including that related to the Anthropocene. Rational discourse has been mired in entrenched positions along the ideological spectrum, with differences increasingly politicised in ways that dismiss opposing views outright. In the process, the nuances and complexities that surround issues have been oversimplified or ignored. Modern education, including geographical education, argues that, in order to engage with the complexity of 21st-century issues, young people need to develop independent, critical thinking and problem-solving skills. However, both have also shown a tendency to be sometimes distorted by the adoption of teaching approaches that only entrench this division and disputation. The aim of this paper is to query if current geographical education might be inadvertently deepening these rifts in global thought, rather than enabling their resolution. To do this requires re-visiting the ultimate purpose and pedagogies of critical geographical education, including the role of a teacher more broadly. It will contend that, if geographical education is to build the capacity of future generations to transform their futures, it needs to learn from its mistakes in the late 20th century, and ensure that it provides them with the full scope of the knowledge, skills and understandings relating to issues, including all the nuances; that is, a thinking engagement with all aspects and positions. Even more so than in the past, geographical education and Geography teachers need to avoid any explicit ideological foundation in their approach. Instead, we should stress the discipline's powers of investigation and critical problem solving, focusing on the adage that the most effective education centres on teaching 'how to think', and not the ideological redundancy of 'what to think'. In doing so, it will also provide young people with another key ingredient for their futures: hope.

## **Linking Geography of Sustainable Consumption to Education for Sustainability**

**Ana Espinosa Seguí**

In recent years, Education for Sustainable Development (ESD) has become an essential educational tool in raising awareness and training students at all levels of education about the current and future challenges we face. The teaching and learning process of ESD also includes the training of teachers, especially at the highest educational level, the university, which must necessarily include the perspective of sustainability in any university scientific specialisation.

In this way, it will be possible to ensure greater environmental awareness and the necessary personal and social transformation of future professionals in any of the university disciplines. Geography, as a holistic science of the territory, is perfectly qualified to lead the inclusion of ESD in university education.

In this sense, in the 2022/2023 academic year, a multidisciplinary team of university lecturers, mostly from the Geography departments of the University of Alicante (UA) (Spain) included in the annual teacher training plan of the university a course on sustainable consumption with a behavioural change challenge associated with it.

The course was centred on a series of eight short information pills focused on promoting small changes in the behaviour of energy and water consumption, fashion, mobility, food, tourism, data consumption, and waste generation both in the workplace and in the homes of the participants. In order to bring students together and ensure behavioural change, a community of practice was created over a period of three months after the course was held through an online social network.

The results show the importance of the group of pairs for sharing information, learning from the group, encouraging others to make small changes in their individual routines and adapting their lifestyle to more sustainable habits of consumption.

## Session 1b: Convened sessions

### **Creative Pedagogies for a Post-Extractive Transition**

#### **Daniel Selwyn**

The climate and ecological crises, which have collectively come to be referred to as the Anthropocene epoch, evoke manifold and contested responses and solutions. This session will spotlight pedagogical approaches developed by the London Mining Network, an alliance of more than 30 human rights, development, environmental and solidarity groups working with communities around the world affected by the activities of mining companies based in or funded from London, to address these challenges with educators and young people. Education is an integral part of the work that LMN does, raising awareness about the social and ecological harms of mining, and supporting the resistance of social movements, trade unions and local communities resisting these harms and building alternative worlds to the Anthropocene in the process. LMN's education work takes a critical geographical and pedagogical perspective on issues relating to the Anthropocene. Through workshops in schools and universities, as well as teacher training days, LMN combines creative pedagogies and critical geographies through artistic interventions, storytelling, board games and role play. In workshops like Above the Mine, students learn about different cosmologies of rivers and forests through the perspectives of mining companies and Indigenous communities, while in the Phone Cycle board game students trace the global geographies of extraction, production and disposal that underpin the consumption of everyday objects like mobile phones. This session will focus on the educational resources curated around the Just Transition, drawing on research by LMN on the materials required for the development of green, renewable technologies--from Bolivia's lithium to the DRC's cobalt--without which neither electric vehicles nor solar panels could materialise. As one of LMN's education workers, geography teacher Daniel Selwyn will present these cartographical resources alongside Mock UN COP role play materials to highlight how students and educators can engage in critical and creative responses to the greatest challenge of our times. This will be an interactive session where the audience can participate and practice the use of these resources and discuss how they can be applied in different educational contexts.

### **Engaging in Research Excellence: Methodologies for the New Millennium**

#### **Gillian Kidman**

Geography education researchers explore the multi- and interdisciplinary problems from within and across societies, making it difficult to determine a 'signature' methodology. Different problems reveal different ideas about what the problem is (ontology) and how we understand it (epistemology), as well as different research methods. The rationale for choosing a method is crucial and it may entail knowing what methods research funders see as credible and what types of evidence they find persuasive. An important question for early-career researchers in geography education is how to undertake research that is both rigorous in its own right, and relevant. Relevance is paramount – our research must be useful to those who are impacted by the new evidence, insights and concepts it generates. If relevance is not explicit, the research will be detached from society, and will not attract funding or be publishable.



This workshop will explore the methodological characteristics and trends of research projects that have attracted competitive funding. The second part of the workshop will look at the implications of these findings for your own research funding and publishing trajectory.

## Session 2a: Textbooks, resources and pedagogies in, and for, the Anthropocene

### **Development of climate change discourse in Finnish upper secondary geography textbooks and curricula 1985–2023**

**Paavo Ikonen**

Development of climate change discourse in Finnish upper secondary geography textbooks and curricula 1985–2023.

Climate change can be seen as the most important environmental problem of our time. Climate change is affecting in a negative way to ecosystems and societies. According to IPCC it is essential to control climate change.

Aim of the research is to bring new perspectives to understand climate change discourse of present and past and to open critical social conversation about climate change. Results can be utilized by book authors and in educational science. Sub questions are: 1) What is the human influence in climate change 2) How are the consequences of climate change described? 3) What kind of role is given to individuals and societies to control climate change?

Study uses a critical discourse analysis (CDA) to figure out climate change discourse in Finnish upper secondary geography textbooks and curricula from 1985 to present day. Research material consist of five curricula (1985, 1994, 2003, 2015 and 2019) and 18 compulsory courses textbooks. Study uses CDA developed by Norman Fairclough.

According to Michel Foucault, institutions, like school, are using power via discourse to students. It is vital to understand the power of discourse because discourse is affecting student's world view. World view is the basis how student see and act in the world.

There are some earlier studies of climate change in textbooks, but in those there were no discourse analysis method. My PhD study can be seen as societal study that brings up past and present attitudes, values, and knowledge about climate change in Finnish society.

### **Dimensions of Diversity in Geography Textbooks**

**Leoni Doerfel and Catrina Peter**

The Epoch of Anthropocene requires adaptations for education e.g., the need of intersectional and diverse education (Gough 2021). This paper deals with the representation of diversity in German geography textbooks. The aim is to investigate by an oriented category-guided qualitative content analysis if the intersectionality is shown in German geography textbooks. The category system is deduced deductively from the theory of diversity dimensions which was derived from the "4-Layers of Diversity Model" by Gardenswartz and Rowe (2003). The model has been extended in its context: The dimensions are not exclusively related to the individual, rather than oriented to the various regularities and laws regarding the diversity of society. The research includes all currently existing 11 licensed geographic textbooks in Hesse. The relevance can be derived from both, a variety of

curricular and technical requirements of Geography and current processes like globalization, migration, and social movements (Stoicovy 2002).

It is found that all included dimensions appearing in the textbooks, but the frequency of dimensions of diversity is very different. Furthermore, the illustration of dimensions varies due to the content and class. Coupled with degrees of expression it can be identified a unidirectional identification of countries and whole continents. This implicates that German geography textbooks construct a stereotypical world and convey it to the students.

## **Visuals of Climate Change in School Textbooks**

**Mareike Schauss**

Images have become an indispensable part of a digitalised and mass-media world. While there are several studies on the influence of images on the discourse on climate change in the media, the visual representation of climate change in textbooks, which continue to be an important medium of instruction, has hardly been studied so far. The selection of images and pictures in textbooks as well as in the classroom influences the perception of the corresponding space or the depicted facts, as they are never neutral. The aim of this study is to identify the visual representations in textbooks in terms of form, image theme and motif related to the topic of climate change. The procedure is based on the method of qualitative content analysis. The results show that mainly photos, graphics and diagrams are used, whose contents differ from those of the media coverage. Besides diagrams and models, the consequences of climate change and the topic of nature are most frequently depicted. Depictions of mitigation measures that would promote perceived self-efficacy are underrepresented in the textbooks studied.

## **Inquiry-Based Learning on Climate Change: Research-Based Design of a Learning Environment for Upper Secondary Education**

**Sebastian Brumman**

Education plays a key role in addressing climate change as a central challenge of the Anthropocene. While climate change education can foster desirable competencies to address this topic, it also faces a multitude of didactical key issues. These consist, for instance, in the complexity of the topic (Ohl, 2013), an often-perceived psychological distance to climate change (Gubler et al., 2019), or a discrepancy between the knowledge and action of people (Knutti, 2019). Additionally, the promotion of climate literacy needs to encompass the dissemination of content, procedural, and epistemic knowledge about climate science as well as skills in accessing and assessing information in this context (Azevedo & Marques, 2017).

One promising approach to deal with such issues is Inquiry-Based Learning (IBL), especially in formats that are closely oriented to authentic science (Brumann et al., 2022; Chu, 2017; Namdar, 2018). Whereas IBL is predominantly located in higher education, its potentials are not yet being fully exploited at schools (Buchanan et al., 2016). Against this background, we developed an IBL environment for senior-level high school students: Over the course of one and a half years, students carry out a full research cycle to inquire regional implications of climate change in individual, interest-based research projects. Following the Design-Based Research approach, we derived design principles from literature to create an initial conception. During a pilot cycle and two main research cycles, we applied this conception in 34 seminars at Bavarian high schools with 433 students. Based on a triangulation of qualitative research methods, we evaluated and iteratively redesigned the IBL environment.

At the conference, the key elements of the conception will be presented with regard to central research findings. A special focus will be given to challenges of IBL at schools, which could be identified in the study, and to adequate guidance measures to address them.

## Session 2b: Pedagogies of hope, courage and resilience

### **Pedagogies of courage: exploring the Symbiocene**

#### **Tom Wils and Joost van Damme**

Young adults are growing up in a world of complexity and change. Navigating this reality requires them to understand their own position and to respond in a creative way to the uncertainties and disagreements inherent of the wickedness of our times. They need to learn how to employ uncertainty and disagreement to support rather than undermine resilience. Essential to such a development is dialogue. Using spoken language to articulate understandings, values and emotions, to clarify the nature of key uncertainties and disagreements, helps them to integrate the various facets of their intellectual and emotional life. It brings them back to Bruno Latour's notion of the Earth, from where they can venture into the adventure of life and redefine the relation between man and nature. It turns the Anthropocene into Glenn Albrecht's concept of the Symbiocene, an epoch where man does not dominate nature, but lives in symbiosis. In this contribution some opportunities and results of dialogic geography education for such transformative practices are discussed, highlighting the importance of a pedagogy of hope and courage in moving beyond the popular tales of doom.

### **Grounds for hope in the Anthropocene: a curriculum necessity?**

#### **David Alcock**

Environmental crises, a dramatic media landscape, and political polarisation have contributed to a widespread belief that 'things are getting worse' (Duffy, 2018). Of particular concern to educationalists is the associated rise in eco-anxiety amongst young people (see, for example, Hogan, 2020; Hickman et al., 2021). Voices stressing the importance of the affective domain in geography teaching (for example, Hicks, 2014, Rackley, 2021) have been raised, but the knowledge turn and accountability pressures have arguably entrenched the situation outlined by Hicks and Bord over twenty years ago, whereby "many educators... may make things worse for students by teaching about global issues as if this were solely a cognitive endeavour" (2001, p. 424).

Attempts to respond to this by fostering a sense of 'hope' within geography, development studies, and environmental education have surfaced in recent years (see, for example, Kelsey and Armstrong, 2012; Willis and Collective, 2018; Birch, 2020; Bourn, 2021). Moreover, fostering feelings of 'constructive hope' can lead to an enhanced engagement with education about sustainable development: Maria Ojala urges us to ask "Are there any positive trends to focus on? How has humanity solved large and seemingly uncontrollable problems historically?" (2012, pp. 637–8).

Hans Rosling's Gapminder Institute, the website Our World in Data, and members of the incipient 'progress studies' movement have provided resources which may give geography students such 'grounds for hope' for the future. Drawing on action research from 'grounds for hope' student workshops, alongside preliminary PhD findings regarding ideas of human progress in the secondary geography curriculum, this paper asks to what extent the geography curriculum has adequately and

critically engaged with the notion of ‘grounds for hope’. It also asks how a chastened notion of ‘progress’ might help young people to encounter the Anthropocene and shape sustainable futures.

### **Futuring pedagogies in secondary geography education**

**Tim Favier**

Many young people are caught in a vicious circle between dystopian visions of the future, climate stress and a lack of perspective for action. In a design research study, we developed a ‘pedagogy of hope’ to break this circle. The key component of the pedagogical approach are imagination techniques, in which students in secondary education are encouraged to imagine multiple futures, including sustainable futures. We designed three techniques in close cooperation with teachers and tested them in geography classrooms in the Netherlands. In the first technique, students position themselves along two dimensions: ‘optimistic versus pessimistic vision of the future’ and ‘high versus low influence on the future’. The second technique is called ‘diary of the future’. Students write a diary chapter from a person in 2050, connected to one of the IPCC scenarios. In the third technique, students design a ‘museum of the future’, in which they select an artefact from the present and write a caption made in 2050. The three techniques provide a way to start a dialogue about a variety of subjects regarding the future. It opens the classroom to conversations about mental wellbeing, fear of the future, agency about the unfolding future and last but not least: an image of the future in which we all would like to live in. During the classroom discussions, the teacher tries to highlight the positive examples. Such acts of imagination, tied to present day and future action, can increase efficacy and help overcome political apathy. However, in order to be connected to the needs of Dutch geography teachers, the three techniques need to be connected to the geography curriculum (e.g. address concepts such as ‘carbon footprint’ and give insight into the basis of the IPCC scenario’s). Also, most teachers in the Netherlands didn’t want to steer students too much, and let students develop their own sustainability ethics instead.

### **Critical Reflections on Smart Mobility - Raising Awareness of Teachers and Students for the Social Implications of a Digital Mobility Transition**

**Jonas Koch, Tomke van Hove and Christiane Meyer**

In order to achieve the goals formulated in the Paris Climate Accords, massive changes will have to take place in the mobility sector in the next few years. Great hope is currently pinned on facilitating the transformation from motorized private transport to more climate-friendly mobility alternatives (e.g. public transport and shared mobility options) by digitizing mobility services and offering Mobility as a Service (MaaS).

However, in the call for a comprehensively digitized mobility transition, the aspects of potential social exclusion are still not sufficiently considered. In particular, economically vulnerable and elderly people are less likely to have access to mobile devices or fully understand digital mobility services. Therefore, it is most important to integrate the social implications of a digital mobility transition in educational contexts.

Young people represent a decisive group in societal transformation processes and are active users of public transport and digital mobility services themselves. Educators as change agents play therefore a key role in the context of Education for Sustainable Development (ESD) by creating a fundamental understanding of the digital mobility transition and sensitizing for a critical attitude towards smart mobility. Consequently, raising awareness of the teachers themselves for the social implications of a digital mobility transition is necessary.

The aim of the explorative research design presented is to investigate the perspectives of young people as well as teachers regarding the establishment of digital mobility services and the associated societal consequences. This is achieved through focus groups with students and semi-structured interviews with teachers. Selected results from both studies will be presented.

The research project (2021-2024) is funded by the Ministry of Science and Culture of Lower Saxony, Germany.

## Session 2c: Perspectives on geography education and education for sustainability

### **Young People's Perspectives on Implementing the Sustainable Development Goals – Influences and Pedagogical Approaches**

**Lydia Heilen**

To overcome the current crises of the Anthropocene, the United Nations' 2030 Agenda with its 17 Sustainable Development Goals (SDGs) can point the way to the necessary sustainable transformation. Young people play a key role in achieving these goals. Therefore, it is crucial to empower and mobilize them for a sustainable development. Here, change agents can play an important role as role models for sustainable transformation. To explore how the SDGs can be successfully translated into pedagogical approaches with a particular focus on change agents, it is necessary to include the perspective of young people in the discourse.

Part of this research project was therefore to find out what kind of ideas young people have for implementing the SDGs. For this purpose, this project surveyed twelve online focus groups with three to five young people (n = 44) aged 15 to 17 in the region of Hannover. In these focus groups young people's visions of Education for Sustainable Development (ESD), particularly with regard to the potential role of change agents, were explored. To this end, participants were given the opportunity to interview a change agent of their choice. Moreover, a social network analysis in the form of a Net-Map was carried out. This can be used to draw conclusions about the influences of various actors on young people for a successful implementation of ESD.

In the presentation, crucial results from the focus groups will be shown. The focus is on the implications for pedagogical approaches that can be drawn from the Net-Maps as well as from the young people's reflections on the implementation of ESD. In particular, aspects of participation and transformative learning will be discussed.

This project is part of the overall project “‘Change Instead of Growth’ – The SDGs and Postgrowth Economies from a Perspective of Young People in the Context of ESD” funded by the Ministry of Science and Culture in Lower Saxony, Germany (2019 – 2023).

### **Towards climate-capabilities: developing a holistic understanding of climate change through geographical thinking**

**Yujing He**

As climate change has become a pressing global crisis, many efforts have focused on transmitting scientific knowledge and developing effective pedagogies of climate change education to promote young people's climate-responsive actions. In many countries, school geography is primary channel of climate change education. However, the evidenced underrepresentation of multiple perspectives of geography impedes young people to unpack the complexity of the issue and generate appropriate

behaviors. Applying the ideas of GeoCapabilities, this study aims at exploring young people's climate-capabilities developed through powerful geographical knowledge. This study first unpicks the contemporary geographical perspectives on climate change as a human-environmental issue, including natural scientific perspective, humanistic perspective, social scientific perspective, and posthuman perspective. Through interviews with geography education researchers, this study then explores what kinds of climate-capabilities could be developed through the multiple geographical perspectives. In addition to explicating the contribution of geographical thinking on developing young people's climate-capabilities, this study contributes to a holistic geographical approach for teachers and students to understand climate change.

## **Students' perceptions on the relevance of geography**

### **Noora Kivikko**

This session presents the current state on how relevant school subject Finnish secondary school students consider geography to be. The session presents the early findings of my study which are yet to be published. This session is strongly connected to IGU-CGE Conference theme through the contents of geography as a school subject connecting human, nature, and complex relationships between them.

Students' interest towards science subjects and pursuing careers in science is declining, as well as their belief in their own competence in science (Osborne et al. 2003; Vettenranta et al. 2017). One reason mentioned is that they consider science education as irrelevant (Dillon 2009). Most of the previous studies have not focused on geography specifically (Adey & Biddulph 2001; Jenkins & Nelson 2005; Stuckey et al. 2013).

Geography is classified as part of the natural sciences in the Finnish National Core Curriculum. In practice it is, however, a very interdisciplinary subject in the Finnish education system containing somewhat equal number of elements from humanities and physical geography. Climate change, sustainable development, globalization, and area studies are all considered to be key parts of geography (Finnish National...2016). In everyday life, according to Youth Barometer (Kiilakoski ed. 2022), Finnish youth place a lot of importance to some of those themes as they value sustainable lifestyles and the fight against climate change.

Data of this study was collected in February 2023 from Finnish secondary school students (age 14-15) in Päijät-Häme region. Students were asked to answer a questionnaire. The concept of relevance was approached from individual, vocational and societal levels. in past (Stuckey et al. 2023). They were also asked to draw what they consider geography to be.

## **Image of Geography from the perception of students: what influences it and its consequences**

### **Veronika Korvasová**

Geography as a school subject, despite its synthetic and interconnected nature, is facing disinterest from pupils and its position in the curriculum is beginning to be questioned. Globally, we can observe a decline in the number of hours of geography taught in schools, and the Czech Republic is no exception. According to recent findings, only 58% of Czech pupils enjoy geography and only half of the students find geography an interesting subject (CSI, 2019). This article explores the current state of geography from the students' perspective and what influences it.

The image of geography is defined within the social construction of reality theory (Berger & Luckmann, 1991) and postfeminist theories that trace the perception of an undervalued group seeking

a voice. The main factors were identified in a systematic review (Korvasova, 2021) and consist of the usefulness of geography, the teacher, teaching methods, family background, and achievement. This paper presents the findings of a questionnaire survey conducted in the first quarter of 2023 among 1% of Czech lower secondary students in grades 8 and 9 (13-15 years old). The data shows that the decisive factor is the teacher and his/her personality. Which is closely related to the usefulness of geography. It shows that if students can relate things to everyday life, they are more interested, and their image of geography is higher. The study gives insight into the issues of conceptualizing geography teaching to make it more relevant to the needs of the Anthropocene and today's students.

### Session 3a: The role and nature of national curricula in the Anthropocene

#### **How to achieve the continuity of geography curriculum in China?: Based on the analysis of curriculum standards**

**Rong Ding, Xin Yan and Yushan Duan**

Geography curriculum is one of the required courses in China's national curriculum system, which is arranged as Science at the primary school stage, Geography at the junior high school stage and Geography at the senior high school stage. With the issuance of curriculum standards, it specifies the arrangement and continuity of geography curriculum at different stages. Based on the analysis of the curriculum standard documents issued by the Ministry of Education of the People's Republic of China, this paper expounds the content of geography curriculum, curriculum objectives and academic quality, and introduces how China achieves the continuity of geography curriculum at the national curriculum level.

#### **Interpretation of the revision of the "Compulsory Education Geography Curriculum Standards (2022 Edition)"**

**Yushan Duan, Xin Yang, Rong Ding, Sheng Miao**

The implementation of the last round of compulsory education geography curriculum reform has achieved remarkable results. At the same time, it is found that there are problems to be further improved in the process of practice. On the basis of in-depth research, extensive investigation and soliciting suggestions from many parties, the geography curriculum standard revision team of the 2022 edition of compulsory education has carried out the revision of the geography curriculum standard. The revised curriculum standard has great changes in the nature, concept, objective, content, evaluation and implementation of the curriculum. The curriculum concept is more expanded, detailed and specific based on the 2011 curriculum standard. The curriculum objective has changed from three-dimensional objectives to the cultivation of geographical core literacy. The content requirements have further changed to situational, life-oriented and interesting, and put forward interdisciplinary thematic learning requirements. In addition, the revised curriculum standards have added academic quality evaluation standards. The implementation suggestions focus on the requirements of core literacy training and pay attention to a variety of evaluation methods.



## **Two different worlds: A comparison of approaches to climate change education across the school geography curricula of the Netherlands and Spain**

**Yaël Duindam**

Secondary geography education across the world is expected to help prepare for the global transformation toward sustainable societies. Recently, the European Commission introduced the GreenComp framework as a guiding principle for European countries. All learning should lead to action for a sustainable planet, which can be conceptualized as values education and a transformative approach to climate change education (CCE). Teachers are expected to implement (such) CCE into practice. However, teachers do not stand alone: we cannot fully understand teachers' views without understanding the educational context they are part of and are professionally expected to fit into. Teachers across Europe are, primarily, bound by educational guidelines at a national level rather than international level. We should acknowledge that their contexts – and potential alignment with international CCE aims – vary greatly across countries. Systematic cross-national studies to compare learning goals regarding CCE across European contexts, and their alignment with international aims, have been very scarce. Therefore, we performed systematic content analyses on the national curricula (ORF) and textbooks (PRF) for secondary geography education in the Netherlands and Spain. GreenComp was used as a reference framework. The results show that the Spanish curriculum includes goals across all CCE domains. 'Values', 'Complexity' and 'Acting' were strongly promoted, which suggests (alignment with) a transformative, value-based approach. Goals were mostly formulated as skills and attitudes. The Dutch curriculum had a clear focus on 'Complexity' and, as a second priority, 'Envisioning Futures', proportionally formulated as knowledge and skills. Explicit transformative goals were (almost) absent, which may be related to the importance of 'educational freedom' and preferences for alternative approaches to CCE. Thus, for (designing) future CCE, we also need to adapt to diverse contexts, not just to ideals.

## **Geography for the Future? Power and knowledge in the Geography curriculum in Ireland**

**Susan Pike**

Within the challenging and changing world that is the Anthropocene, our youngest Geographers are curious: Why is the world as it is? How will the world be when they are older? And their teachers are equally as curious: How can we teach children for the world we live in as well as the world they will live in? This paper considers some of these issues in the context of curriculum change. I will consider the following questions, using the backdrop of curriculum changes in Ireland: Who asks the questions relating to Geography in the curriculum? What is the research evidence for Geographical approaches and content? And what decisions are being made? Using this process of curriculum change in Ireland, I will consider what decisions are made about curriculum and what impacts they have for Geography in the Anthropocene.

## **Session 3b: Geography teacher education: Engaging with the experiences and views of student teachers**

### **(Un-)certain knowledge of pre-service Geography teachers about climate change**

**Melissa Hanke, Hannes Schmalor and Sandra Sprenger**

Climate change (CC) is a major challenge of the Anthropocene. To address it, individuals and professionals must be well-informed. The best predictor to develop the necessary competencies is

through climate change education (CCE) in schools (Lee et. al, 2015). Geography teachers must be familiar with CC due to its importance in curricula. Chang (2023) states that teaching CC is a challenge due to its complexity, uncertainty and ambiguity. From a competence-theoretical perspective, teachers need to have professional knowledge, which can be divided into content knowledge, among other subareas (Baumert & Kunter, 2013). Pre-service teachers show deficits in general content knowledge (Béneker et al., 2015; Scholten, 2022) and CC (Lambert & Bleicher, 2013). This leads to them confronting their own (false) knowledge or non-knowledge. The perceived (un-)certainty about their own knowledge varies (Tauritz, 2012) and can have different effects on lessons such as a focusing or marginalising.

This study surveyed the (false) knowledge, non-knowledge and (un-)certainty of geography teachers regarding climate change. Questions addressed:

1. What content knowledge do pre-service geography teachers have about CC?
2. How (un-)certain are pre-service geography teachers of their own (false) knowledge regarding CC?

A questionnaire study of geography students (n= 226) at four German universities surveyed their (false) knowledge, non-knowledge and (un-)certainty. The questionnaire was based on Taddicken et al. (2018) and differentiated five knowledge dimensions: (1) basics, (2) causes, (3) impacts of CC, (4) climate-friendly behaviour, and (5) climate science.

Results show differences in (1) pre-service geography teachers' knowledge levels and (2) CC knowledge dimensions. Common student misconceptions such as the ozone hole were also identified. These results provide points for possible improvements to university courses on CC for geography teachers (Hanke et al., in prep.).

## **A proposal of pre-service teachers' typology based on their conceptual understanding and certainty on the example of the concept of contours**

**Lenka Havelková and Martin Hanus**

Developing young people's understanding of concepts in geography, and subsequently their geographical thinking, requires geography teachers who have detailed, structured, interconnected, and accurate conceptual knowledge and understanding. Therefore, attention must be paid to pre-service geography teachers' conceptions prior to their university preparation and the courses must be adapted according to their conceptions. Considering this, the presented study focuses on the pre-service teachers' understanding of the concept of contours on maps and discusses its implications for teacher training programmes. The conceptual understanding of 127 pre-service geography teachers was identified by a conceptual test that can be characterised as a two-tier diagnostic instrument since pre-service teachers' certainty in solving the test tasks was investigated as well. Moreover, a questionnaire based on the scaling method was employed to examine the non-cognitive dimensions of the concept, namely the perceived importance of contours, confidence in the related skills, and personal relationship to this concept. The results indicate that pre-service teachers should not be perceived as a homogenous group with identical conceptual understanding of the concept of contours and, thus, the same educational needs. The results also highlight the necessity to consider the non-cognitive dimensions of the concepts. For that reason, the typology of pre-service teachers based on their conceptual understanding and certainty in it has been proposed. Four types of pre-service teachers have been identified: successful-certain, successful-uncertain, failing-uncertain, and failing-certain, and similarities and differences regarding their misconceptions and non-cognitive factors were explored. Why these characteristics matter when choosing the appropriate educational approach for

each type and thus how they influence recommendations for teacher training programmes will be discussed.

### **Pre-service geography teachers' knowledge and practice for the Anthropocene**

Eefje Smit

Teaching geography for the Anthropocene requires teacher knowledge and skills related to Education for Sustainable Development (ESD). Teachers should, among others, be competent to teach systems thinking, opinion forming and problem solving (UNESCO, 2018). Recently, David Mitchell (2022) argued for a more values based approach to these issues. This raises the question what we currently learn our students in geography teacher education: to what extent have they developed knowledge and skills necessary for ESD and thus the Anthropocene?

Grounded in a PCK-framework (Gess-Newsome, 2015) we surveyed Dutch geography pre-service teachers in their final year of teacher education. The 73 respondents answered an open-ended assignment on teacher knowledge and a quantitative survey on teacher practice. We combined these results into individual portraits of 9 pre-service teachers across different geographical topics (migration, natural hazards and plate tectonics).

We found that although a lot of pre-service teachers pursue sustainability, they are not always able to translate these goals into meaningful teaching strategies. Most pre-service teachers stick to presentations and visualizations in their geography lessons. Moreover, they experience difficulties when handling controversial issues. The overall view is that these students are still developing their PCK and retain to familiar teaching strategies. Courses on ESD can possibly enhance this development.

### **Developing a critical eye for climate policy: Teachers-in-training analyse the Green Deal from behind a veil of ignorance**

Joost van Damme and Tom Wils

Developing a critical eye for climate policy: Teachers-in-training analyse the Green Deal from behind a veil of ignorance

The young people of today find themselves confronted with a complex adult life in the Anthropocene, in which they may bear more responsibility for human and ecological well-being than any other generation before. In the Netherlands, this responsibility is addressed in the national curriculum for the upper levels of the Dutch education system, according to which they are expected to be able to evaluate 'policy aimed at solving global environmental problem on a macro-regional scale' (CvTE, n.d.). In preparation of supporting young people to reach this goal, geography teachers-in-training themselves were asked to evaluate realistic examples of complex environmental policies from behind a philosophical 'veil of ignorance'. The experiences from this method bring to the fore new questions about the pedagogy used in teacher education, self-confidence of teachers-in-training, the usability of 'authentic' policy documents in teacher education, and the place of environmental policy in the national geography curriculum.

## Session 3c: Primary geography for the Anthropocene

### Climate Geography Locally

#### Anthony Barlow

The idea behind climate geography locally is to see how 'big geography' issues like climate change can be understood by primary pupils and their teachers. Through interacting locally we may start to see the huge changes that may occur. This aims to position geography as the essential subject where the climate crisis can be taught in a meaningful sense to children aged 3-11.

By using two UK locations (London/ N.E England) as sites for local discovery, this session will combine understanding of climate geography with an understanding of the UK weather patterns. An example will be give of summer 2022, showing local changes (wildfires, droughts) as an exemplar of where change(s) occurred that might be signifiers of what is to come.

It will also look at species thriving in the new normal such as ring-tailed parakeets.

The session will conclude with ideas of how you might teach children about how policies (local, regional, national) might change, rather than them always having to consider how their actions might change, as has been seen with reducing plastic waste and the campaigns around the 3 R's (reading, writing and arithmetic). It is less our individual actions at times, it is more the decisions made on our behalf that really count.

### Beliefs and pedagogical content knowledge of primary school teacher trainees: results of a quasi-experimental intervention study

#### Melanie Haltenberger

##### 1. theoretical background

The study is based on the model of teachers' professional competence, according to that pedagogical content knowledge (PCK) and beliefs are considered significant predictors of teachers' actions and students' learning success (Kunter et al. 2011). A sensitive phase for development and change the two constructs is the university teacher training (Kleickmann et al. 2017, Reichhart 2018). While most studies on teacher professionalism can be found in the field of science and mathematics with a focus on secondary school teachers, there are comparatively few to none with regard to the specific group of primary school teachers and the subject of geography (Krauss et al. 2017).

##### 2. research question

Therefore the study is dedicated to the question of which PCK and which beliefs primary school teacher trainees have about the subject geography (objective one) and to what extent these can be changed through university training (objective two). The target group is primary school teacher trainees from the third semester onwards

##### 3. design and method

The study is to be characterised with regard to objective one, as a non-experimental cross-sectional study (Döring & Bortz 2016). With regard to objective two, it is a quasi-experimental study with repeated measurements in the sense of pre-, post- and follow-up testing (Döring & Bortz 2016). The PCK and beliefs of primary school teacher trainees (N=674) will be assessed by means of questionnaires. The experimental group (N=471) takes part in a seminar intervention on the geographical education in primary school, while the control group (N=201) attends a classical teaching seminar.

##### 4. results

It can be shown that changes took place in the intended direction: newer concepts of geography (education) are more in the students' persuasion horizon after the intervention than classical concepts. In addition, PCK was significantly increased by the intervention. In both areas, different types of students can be found.

## **Language in primary and secondary geography education: a systematic literature review of empirical geography education research**

**Neli Heidari, Markus Sebastian Feser, Nina Scholten, Knut Schwippert and Sandra Sprenger**

Academic language in geography education has attracted attention due to the increasing linguistic heterogeneity in most classrooms. Considering that subject-specific language differs from the language students use in their everyday lives, language-aware geography education contributes to addressing subject-specific language demands. However, there seems to be little empirical research and no systematic overview available concerning this topic. Thus, the aim of this study is to systematically review publications that empirically researched language in geography education to provide a synthesized state of knowledge for future research in this field. In accordance with the PRISMA guidelines, a final selection of 38 studies from three literature databases—Web of Science, ProQuest, and Scopus—were analyzed in this study. The empirical studies were categorized with reference to their subject-specific themes, concepts of space, and working methods, as well as the examined language. The main findings showed that the studies primarily examined language at the text/discourse level and in the written language mode. Particularly, the studies predominately investigated reading skills. Furthermore, physical geographical themes were at the center of the set of publications. This systematic review has both theoretical and practical implications for future research on the role of language in geography education research.

## **We could be climate change heroes: Exploring young children's ideas about the Anthropocene**

**Emma Till**

Young children are sometimes more aware of the need for us as adults to tackle the results of human influence on the earth than we give them credit for. Set against the backdrop of a recently published government strategy for sustainability and climate change, this paper will bring together and summarise the findings from several small-scale research projects undertaken by undergraduate trainee primary school teachers in UK schools. It will focus on the children's pre-existing knowledge and understanding, the origins of their information, their responses to specific taught input about these issues and the children's ideas for next steps and a way forward. Data from interviews with pupils, examples of their written work and observations from the trainees who worked with the children support the findings, which indicate that even the youngest children have a desire to make immediate changes in their own lives and within their school environments as well as wanting to learn more to deepen their knowledge. Now we, as adults need to rise to their challenge.

## Session 4a: The nature and value of geography teacher education in the Anthropocene

### **Teacher professional development for the Anthropocene – developing an online course for geography teachers**

**David Mitchell**

The UCL-IOE Centre for Climate Change and Sustainability Education (CCCSE) is developing a short online CPD course for geography teachers (both primary and secondary phases). This paper explains how the course was developed by asking: how can professional development help geography teachers to contribute to young people's capabilities to live and flourish in the Anthropocene? The challenges and dilemmas of developing the course are discussed, such as which geographies to include, and balancing truthfulness and honesty with hope and action.

The research informed course aims to help teachers to access the potential of Geography (the discipline) to help young people understand the Anthropocene and develop their agency to act toward sustainable futures. The GA curriculum framework (2023) combined with the GeoCapabilities project helps to guide the approach to disciplinary knowledge. Critical geography education with a pedagogy of enquiry for action are important principles guiding how teachers can be equipped to explore more hopeful futures for young people, when teaching issues often represented as catastrophic and fearful, such as climate change. The paper uses feedback from a group of teachers who contributed to developing and trialling parts of the course, to offer tentative findings on its effect on geography teachers, teaching and young people. Further research, when feedback on the course from a wider range of teachers is available later in 2023, is intended.

### **Building Futures - Teacher Education and the Anthropocene**

**Nicole Raschke, Pauline Mai, Pauline Hennig**

Based on the understanding of geography education as being oriented towards social crises (Schreiber 2022) our aim is to support learners to take action in the face of social challenges by raising awareness of their own competence as agents of social-ecological change. We suggest alternative approaches and a shift of perspective on geographical learning processes. The Anthropocene is a chance/opportunity for a rethinking of our relation with the world (Horn et al. 2019). Similarly, transformative learning approaches (Koller 2018) recognise education as a change in our way of thinking and as a rearrangement of structures of relations. Linking both concepts, we ask what geography education in the Anthropocene should/could look like, as well as how the perspective on learning processes shifts when the idea of the Anthropocene is taken seriously. So reflexive learning environments come into view that offer the potential to develop a new understanding of self/world-relations based on tolerance of ambiguity, multi-perspectivity and awareness of systemic connections and their complexity. Besides pupils, it seems crucial to also consider the education of teachers who are confronted with tensions and contradictions inherent in their profession (Helsper 2016). To prepare teachers for challenges of the Anthropocene from the very beginning, we will focus on the initial phase of teacher training in Germany. We propose that university teacher education provides an environment within which we can ask for conditions that promote transformative learning, while at the same time being a transformative learning process itself. As an example for transformative learning in the Anthropocene, we will outline the experiences of our interdisciplinary seminar "Critical Worldbuilding". Bringing together human geography, geography education and future studies, we aim to look at alternative futures. Students will collaborate to create a speculative learning tool dealing with images of future(s).

## **Inspiring Education for Sustainability among Geography Teachers in Singapore**

**Puay Yin Lim and Melanie Lum**

To face the challenges of the 21st century, students need to learn geography through making sense of real-world contexts. The presenters, Geography Master Teachers in the Academy of Singapore Teachers, will demonstrate how they mentor teacher leaders and teachers to design deeper learning experiences through inquiry to develop future-ready students who understand the importance of sustainability and are willing to take action to contribute to being better environmental stewards and socially responsible citizens in the Anthropocene. From piece-meal deliverers of factual content, teachers are gaining confidence to design learning that develops deeper conceptual understanding. The presenters will share how they develop an identity among geography teachers, foster relationships, promote networked learning and create a shared culture to generate a new belief in their roles as influencers. They will share their approach to developing a coherent curriculum for teacher professional development and show the features of a digital platform for curated resources. They will then distill the success factors for supporting teachers' professional learning. While professional development is readily available and generally supported by school leaders, there are still challenges in the process. The presenters will share strategies they are developing to overcome these challenges.

## **Geography novice teachers' orientations towards climate change education in China**

**Xin Ai**

Since December 2017, a competencies-based senior high school geography curriculum is issued in People's Republic of China. That highlights attention for the SDG, global issues and global competences. In the context of the curriculum reform, this study reports on the orientation of fifteen novice teachers towards teaching global issues, in particular of the issue of global climate change (CC). Among all components of teachers' Pedagogical Content Knowledge (PCK), the orientation is defined as beliefs about goals and purposes of education. It is seen as fundamental, as it guides how other components of PCK are put into practice. Empirical research on teachers' orientations towards CC education is essential to contribute to better understanding of current teaching values and practices. In order to analyse the orientations of Chinese geography teachers towards CC education, a list of learning goals and purposes were formulated that fit with the four quadrants of the framework of Papenfuss et al. (knowledge focused, critical thinking skills focused, sustainable behaviour focused, and well-considered behaviour focused). Based on the data, we identified six different orientations. Generally, teachers affirmed that knowledge as a basis for forming opinions or making decisions. Two of them separately focused on the cultivation of critical thinking and sustainable behaviours, but both proposed CC as the typical case to pursuit these ultimate teaching aims. While teachers varied in their attitudes towards stimulating behaviours and inspiring values, thus other orientations belong to more than one quadrant. The majority of them focused on behaviour, but favored instrumental aims and purposes (sustainable behaviour focus) with emancipatory aims and purposes (well-considered behaviour focus). Considering the stress of examination, a teacher focused on 'knowledge focused and critical thinking skills'.

## **Dealing with Uncertainty in a Transformative Geography Education for the Anthropocene**

**Ulrike Ohl and Fabian Pettig**

It is not possible to think about geography education for the Anthropocene without thinking about the future. Thus, education can basically be understood as an endeavor that is oriented towards a future that is yet to be realized and that intends to improve individual and collective well-being as well as the planetary present and planetary future(s). As uncertainty is a constitutive element of the future (Dahlbeck 2014), future as a concept poses a challenge to teaching as a whole and to educational endeavors concerning environmental issues in particular.

In our view, transformative geography education aims to engage students with environmental issues and concerns in the horizon of socio-ecological transformation (Pettig & Ohl, accepted). But which solutions and which individual and political actions are appropriate and ‘sustainable’ in areas such as mobility, food consumption, energy supply, urban planning, etc.? In this regard, factual and ethical controversies as well as multifaceted uncertainties exist in science, politics, and society. In an emancipatory understanding, imparting the one ‘right’ way of individual, collective and political action can therefore not be the aim of education (Kronlid and Öhman 2013).

Against this background, this contribution is concerned with the question of how geography education can support learners in experiencing the future as shapeable albeit its uncertainty and empower them to participate in shaping it. For this, we will discuss different notions of uncertainty regarding their educational implications and uncover challenges for teaching and learning. Building upon these conceptual insights, we propose six guidelines for transformative geography education for the Anthropocene, that embraces uncertainty as a necessity to learning and education and aims at fostering skills to deal with uncertainty in environmental issues.

## **Geography Education for the Anthropocene: Empowerment and Agency**

**Gillian Kidman**

“Geography Education for the Anthropocene” can be reworded to Geography Education for the Anxious: Anxious about the future of humans, about risk, and about population limits. This implies the need for a geography education that addresses our uncertain relationship with nature and that provides the tools for confronting the unfamiliar. This also implies the geographical education currently on offer is no longer adequate, it needs to change. To succeed in the future, youth need an education that offers empowerment and agency, as well as the knowledge and skills of the past. Beginning with the primary school student, educational outcomes need to be the empowerment of the self - not only to improve one’s self (through an education) but also to improve one’s world (through action). This presentation will consider the nature of this curriculum change, and how such a change can assist policymakers, curriculum developers and geography educators to meet the first item in the 2016 Charter’s (IGU-CGE, 2016) International Action Plan. To improve the quality of geographical education and the associated research internationally, the focus and contribution of geographical education towards societal improvement should be more explicit. This will encourage higher levels of public support for geography’s place in the curriculum and to educate for both thinking and accomplishing.

International Geographic Union - Commission on Geographical Education (IGU-CGE) (2016). International Charter on Geographical Education, [http://www.igu-cge.org/Charters-pdf/2016/IGU\\_2016\\_def.pdf](http://www.igu-cge.org/Charters-pdf/2016/IGU_2016_def.pdf).



## **The place of the Anthropocene in Portuguese school geography curricula: recent changes, old challenges**

**Maria Esteves**

The 2020 United Nations Development Report (UN, 2020) launched a new challenge in terms of addressing the concept of Human development of Nations. A new index was proposed measuring Human Development adding environmental and sustainability dimensions. The Planetary Pressures–Adjusted Human Development Index (PHDI) discounts the Human development Index (HDI) for pressures on the planet. The need to achieve a sustainable human development is presently a core topic in our society. The Report (UN, 2020) also presents the notion that this new epoch for Earth we are entering, the Anthropocene, means that “for the first time in our history the most serious and immediate, even existential, risks are human made and unfolding at planetary scale”.

Portugal has assumed a compromise with achieving the 17 Sustainable Development Goals, and education has been considered a priority area of intervention. This compromise has led to changes in the way the school curricula are organized, namely in Geography. In this research we intend to analyse how this idea of the impact of human activities as motors of most of the environmental, social and economic risks our Planet is facing is present in the geography curricula that is being taught in our schools.

In 2014, the Portuguese Ministry of Education considered the need to create a content centred geography curricula that would clarify to teachers and student the important information that school geography should provide. More recently, after a political change in the government a new view of what geography should teach was introduced – contents became “basic learning topics” that should be the base of the core contents of the school subject.

In our research we also intend to learn how these changes have incorporated the new challenges facing education in general and geography education in particular, having in mind the need to integrate the human and physical dimension of geographical phenomena studied in schools.

### **How do teachers develop map-interpretation skills in lower secondary students?**

**Kristýna Štolcová and Martin Hanus**

Setting a goal and choosing an appropriate teaching strategy can be considered a key skill for all teachers. In addition to goals dealing with factual knowledge, teachers should also aim at (higher-order) skill development. One of the most important skills to be developed in geography lessons are map skills. Therefore, we decided to investigate the strategies that teachers use to develop map interpretation skills (as a representative for the cognitively demanding map skills) in their students. The research was carried out with more than 10 geography teachers in lower secondary schools in Czechia. Each teacher taught the lessons in one optional class of students aged 14-15. The research comprised of examining the strategy chosen by the teacher to achieve a set goal and testing the effectiveness of this strategy by pre-testing and post-testing the level of students' map skills. The teacher was given a goal and a time (four lessons) to achieve it in the students. He/she must therefore choose an appropriate strategy. By analyzing the reports from these lessons and the results of the tests, we can evaluate whether the goal has been met, and, therefore, the efficacy of the strategy chosen assessed. Finally, the results of the findings was discussed with the teacher during the interview and act as feedback to help the teacher with self-assessment. The paper will present the answers to the following research questions:

What strategy did the teacher choose to fulfill the stated goal?

Was the stated goal fulfilled by the teacher?

Was the strategy chosen to achieve the goal efficient?

The findings of our research can be beneficial for curriculum designers. In a broader context, they show the ability of teachers to meet the educational goals. The skills of working with the goal and planning lessons is crucial for the training of pre-service teachers, to whom the results may show possible bottlenecks in these skills of teachers.

## Session 4c: Citizenship, capabilities and voice in the Anthropocene

### **Which role does geography education play in educating citizens for the Anthropocene's era?**

**Marco Lupatini and Andrea Plata**

According to Lange (2020) teaching in the Anthropocene should cross disciplinary boundaries and be based on a-disciplinary projects connected with the reality, in which local and global interact to facilitate contextualization and alterity plays an important role in a collaborative work including debates. The anthropogenic impact on our planet poses complex challenges which requires the mobilization of systemic thought and the capacity to decide collectively in uncertain situations (Lange, 2020: 3). This affects education which should not be relegated to a transmission of knowledge but should also contribute to form the capacities essential to handle in the contemporary world, capacities which are the base of citizenship (Lange, 2020: 2) conceived as dynamic and not static.

A geography education based on systemic thinking, geographical reasoning, and critical thinking contributes to form citizenship and plays an important role in strengthening the capacities mentioned above and in allowing students to think alternative and more sustainable conceptualization of development.

In our presentation we would like to expose the actual state of work of a three-year international and interdisciplinary research project at its beginning focused on the design of a didactic toolkit based on the controversies generated by the challenges posed by daily life, with the aim to contribute to the reflection on the role of geography education in forming the citizens of today and of tomorrow in the Anthropocene's era. In the project are involved institutions from Switzerland and Germany. The planned toolkit should foster the mobilization of critical thinking and its consolidation, the development of argumentation's and decentration's abilities. This on the base of the treatment of politically controversial questions raised in daily life by the challenges of the Anthropocene.

### **Children's rights in, and to, the city: Everyday life, education and empowerment in London and Glasgow**

**Lauren Hammond**

As the world's population grows, so does the number of people living in, or connected to, urban spaces. Cities are one of 'the main products and producers of the Anthropocene' (Amin and Thrift, 2017: p. 27), and the Anthropocene's geologic record will show resource extraction related to the material products made by people to shape urban life (Ibid.).

This paper is concerned with young people, not only as one of the largest social groups in all cities (Kraftl, 2019), but also in considering what van Vilet and Karsten (2015) term children's rights in,

and to, the city. Rights in the city refers to children's 'access to urban resources which affect their life chances' (e.g. schools, play spaces and clean air), and rights to the city refers to 'opportunities for meaningful participation in urban development' (p.2). Consideration of children's rights is important, as despite being a 'visible and vibrant presences' in cities (Skelton and Gough, 2013: p. 456), young people are often socio-spatially marginalised in urban spaces.

Drawing on research conducted in two secondary schools - one in London (England) and one in Glasgow (Scotland) - this paper explores children's perceptions of their rights in, and to, the city. In doing so, it considers 'how we, as adults, enable or constrain them in the process of making the world anew' (Aitken, 2017: p. 19) and ultimately 'place' of geography education in empowering children in their everyday lives and futures.

## **Post Growth in Geography Education from the Perspectives of Young People and Experts in the Context of Education for Sustainable Development (ESD)**

**Lara Brede**

In 2015, the Agenda 2030 has been adopted by the member states of the United Nations (UN) in which the core is represented by the 17 Sustainable Development Goals (SDGs). For reaching the SDGs, a transformation of the current economic system increasingly gains importance. On the contrary, the SDG 8 still refers economic growth. In the Anthropocene, the exploitation of resources is an important issue and directly linked to the current economic growth system. Different forms of alternative economics which are characterized by detaching from the current economic growth system are covered by the term post growth.

The research project "Change instead of Growth" (2019-2023, funded by the Ministry of Science and Culture of Lower Saxony (MWK)) aims among others at reflecting on young people's perspectives on post growth. Seven groups with 3-4 young people took part in three online meetings. The first and last meeting were conducted as focus groups. In the second meeting, the participants interviewed a local change agent. The students discussed the potential of alternative economies on a local and global level and how to implement post growth economies in school education and in their everyday life. Selected findings of their perspectives will be presented.

Supplementary to these suggestions, considerations of post growth experts were collected in the course of a panel discussion within the framework of the research project "Young People create Change – Facets of a Transformation of our World for a Sustainable Society" (2022-2023, funded by MWK). Selected findings on how the experts discuss the opportunities of young people to create change and how they assess the role of school education will be presented.

These ideas and perspectives will be discussed with regard to pedagogical approaches in the context of "ESD 2030", paying particular attention to the key reflections "transformative action" and "structural changes" (UNESCO 2020).

### Keynote one: Pedagogical Disobedience for the Anthropocene, Dr Amber Murrey

This keynote is an invitation to think about the potentials of purposeful pedagogical disobedience in the classroom. Disobedient pedagogies centre processes of (un)learning, intentional revivals of disobedient epistemes, and the cultivation of anti-racist decolonial practices that refuse colonial and capitalist logics in the Anthropocene.

### Keynote two: Spaces of Childhood and Education in the Anthropocene, Professor Peter Kraftl

This talk will consider the processes and challenges presented by the contested notion of the ‘Anthropocene’ from the perspective of childhood and education spaces. It will begin by introducing geographical research about children and education, focusing on questions of children’s ‘spatial agency’ in learning about, moving around, feeling and interacting with their environments. The rest of the talk seeks to question two sets of assumptions that still underpin the ways in which children’s relationships with environmental knowledges and processes are commonly understood in the Minority Global North. It does so through examples taken from three recent research projects with which I have been involved. Firstly, I seek to question and expand the ways in which children’s experiences of and learning about the environment and ‘natures’ are conceived. I do so through an ongoing programme of work that has examined alternative education spaces (such as homeschooling and Forest Schools). In those kinds of spaces, educators and other practitioners seek to think differently both about what (and who) children are, and how they relate to non-human companion species. I also draw on the preliminary findings from a current research project that is using interdisciplinary, co-produced methods to understand how children relate to and imagine the future of the UK’s treescapes. Secondly, I discuss a range of methods and outcomes from a recent project – ‘Plastic Childhoods’ – that sought to trace the many and diverse ways in which children’s lives, bodies and environments are entangled with plastics. This part of the talk will explore a range of activities that took place within and beyond a secondary school geography classroom: social media analyses of the circulation of child-related plastic objects; a series of hands-on workshops, including a plastic sculpture session co-organised with artists; and, the use of environmental nanoscience techniques to determine, visualise and prompt reflection about the presence of plastics and other chemicals in children’s bodies and environments. Throughout, I also reflect on and raise questions about how the methods and findings from these research projects might resonate with the teaching of geography in schools and beyond.

## Session 5a: Decolonising Geography: Voices, knowledges and positionality

### **Decolonising the Anthropocene Era: A Muslim Geography Teacher's Perspective**

**Iram Sammar**

This paper offers to present thoughts linked to the idea of the anthropocene through the decolonial lens of Islam, and the perspective of a Muslim geography teacher. An analysis of the Surah (or chapter) within the Qur'anic text of "The Earthquake" will provide the framework for this hermeneutic argument. The verses within the chapter will be linked to the idea of anthropocene in three potent ways. Firstly, the second verse will be discussed to analyse how the Earth has been accumulating human related burdens; second, the notion that the Earth will declare what has been happening on it since the arrival of the human race; and thirdly, the concept of why humans will be called to account, by a divine court of justice within the Islamic context. It is of great importance to highlight the Islamic perspective, as there are "hidden histories" within geography education that have the potential to make sense of the huge negative impacts on the environment that have been caused by "us" humans collectively, that geographers, scientists and theologians all might take seriously in collaboration. Hence the paper makes an important contribution towards anti-racist geographies and decolonial thought in understanding the need to take heed of plurality in perspectives so as to create an inclusive space for Geography education.

### **Decolonising the Anthropocene in school geography: Climate change and Cameroon**

**Christine Winter, Daniel Whittall, Alesha de Fonseca, Aliyou Haman, Manu Lekunze and Melis Cin**

The concept of the Anthropocene centres the human. However, as Sylvia Wynter argues, the concept of the human has been constructed through a series of racialised inclusions and exclusions. In climate discourse, there is increased acknowledgement that under racial capitalism not all humans are equally responsible for the causes of climate change; nor are its impacts evenly distributed. Critiques of the racializing logic of the Anthropocene are legion, but have not yet impacted the way the concept of the Anthropocene is recontextualised in school geography. Kumar (2022) notes that under the aegis of the Anthropocene, a risk of pre-occupation with the urgency of climate change exists, at the expense of attending to colonial and racialising forces. Swyngedouw and Ernston (2018) argue that the Anthropocene is deeply depoliticising, by facilitating 'the off-staging [of] certain voices and forms of acting'. In responding to the purported urgency of the Anthropocene, we ask: whose voices and forms of acting does school geography risk off-staging? We report on a collaborative curriculum project bringing together researchers from the Decolonising Education for Peace in Africa project, the Geographical Association and school geography teachers in the UK and Cameroon. The team is developing educational materials to address the role of the 'triple colonial project' that Cameroon has endured in explaining the country's uneven geographical positioning in relation to climate change. Our work responds to Bhambra and Newell's 2022 challenge of making colonialism 'more than a metaphor' in the educational narratives we construct about climate change. The project foregrounds global power relations, alongside histories of resistance and the everyday knowledges and voices of Cameroonian peoples. The paper provides a case study of one way to address the fact that 'colonialism/coloniality are not over but are all over' (Ndlovu-Gatsheni, 2022: 896).

## **The Rise of Ethnic Studies: Geography's Challenges and Opportunities**

**Kelly León**

In California, geography as a stand-alone school subject is rapidly disappearing. While the reasons for this are numerous (see Lambert & León, 2023), the most recent pressure is a state-mandated secondary course called Ethnic Studies (ES). The mandate will likely be the ultimate blow to geography's place in the school curriculum and so this paper seeks to explain the rise of ES in California and elsewhere in the U.S., what students have to gain from taking ES, and what might be lost with the disappearance of Geography, not least students' understanding of the Anthropocene. There are, undoubtedly, lessons for the international geography education community relating to ES' aims of fostering minoritized students' academic literacies and nurturing their racial literacies and cultural identities (Zavala, 2022). Geography can learn from ES' commitments to incorporate knowledge traditions that have been silenced, understand systems and structures of power, build community and solidarity, and consider prospects for transformation and change (Agarwal-Rangnath, Yeh, & Hsieh, 2022). Likewise, a geographic perspective would be a welcome addition to the ES guidance given by the state (California Department of Education, 2021), even in its own contribution in developing teachers' and students' racial literacies (Morgan & Lambert, 2023). Geographic approaches for situating communities within global contexts and insights related to issues of environmental justice would strengthen ES' position in responding in educationally significant ways to the challenges of our time. The California Geographic Alliance and others vested in teaching and learning global processes and perspectives have already begun responding to the curricular shifts in the state. They will do their part in keeping some semblance of geographic and global thinking in the educational mix. Their current projects and additional ideas for the cross-pollination of ethnic studies and geography will be explored.

## **Reconsidering East Asia's Traditional Geography for the Anthropocene**

**Hyunjin Kim**

The Anthropocene underscores how human activity has altered the planet's systems, revealing the flaws in the modern concept of progress and human domination over nature. Postcolonial scholars assert that colonialism and imperialism have fueled the environmental crisis by extracting resources, destroying indigenous knowledge and practices, and imposing Western development models.

From a postcolonial perspective, East Asia's traditional geography, including concepts such as Korea's 'pungsu' and Japan's 'fudo', offers insights divergent from modern Western knowledge. 'Pungsu' reflects the interconnectedness of natural and built environments and its impact on human life and well-being. 'Fudo' recognizes the spiritual significance of physical landscape features.

Whether studying abroad or domestically, many geographers in East Asia receive their education in Westernized institutions. Their knowledge is influenced by Western perspectives, and traditional geography is often disregarded in knowledge systems dominated by mainstream Western paradigm. However, to fully grasp the geography of East Asia, it is necessary to consider the region's unique perspectives on knowledge, memory, and emotions.

East Asia's traditional geography challenges the prevailing Western view of nature as a resource for human use. It offers an alternative understanding of the relationship between humans and the natural world, urgently needed to address the environmental crisis. Culturally sensitive and holistic approaches to this relationship can be informed by traditional geography concepts, and foster greater environmental sustainability.

## **Future Focused Teaching Orientations of Geography Teachers in Germany and The Netherlands**

**Tine Béneker and Uwe Krause**

The Anthropocene and climate crisis requires (among others) abilities to think longer term, to imagine futures, to distinguish probable and preferable futures, to apply multiple perspectives to (sustainability) issues and make trade-offs. Geography education can help young people to develop these capabilities. However, futures orientations in geography education still seem to be limited, due to for example curriculum restraints, absence in teacher education and lack of teachers knowledge and experiences. In a comparative study we interviewed 30 Dutch and 20 German upper secondary teachers about their teaching orientations (as part of their PCK) and the type of tasks they set while teaching the global food issue. A considerable number of teachers in both contexts show an orientation aiming at futures and sustainability oriented thinking and problem solving skills. These teachers tend to use more higher order thinking tasks in their lessons. Although the curriculum and central examination context do influence the type of task setting. During this presentation we will identify in greater detail the type of task setting, the intended powerful knowledge and the related argumentation by teachers, in order to get a better and clearer idea on how these teachers already shape their 'teaching in the Anthropocene'.

## **Session 5b: Examining the purposes and nature of geographical education in the Anthropocene**

### **Making connections between the Anthropocene, school geography and young people's career aspirations**

**Emma Rawlings Smith and Gemma Collins**

According to the Royal Geographical Society (with IBG) 'we have an obligation to ensure that our pupils are equipped with more than just qualifications when they leave school' (n.d), this is important as only one in seven A level geographers in England (aged 16 to 18 years) go on to study the subject at university. When considering the complexities and dynamics of our rapidly changing world and the interests and challenges faced by young people as they enter the world of work, we contend that stronger connections are needed between school geography, career education and professional geographers working in real-world contexts. We report on empirical research that explores the career aspirations of A level and undergraduate geographers and finds that students are most interested in careers related to sustainability, environmental geography and development. We argue that growth in the sustainable energy and technology sectors mean that geographers will continue to be highly employable. Consequently, career-orientated lessons can be a powerful strategy to develop real-world geography knowledge and skills, and raise awareness of the work of professional geographers; this should be integral to the curriculum if schools are to better support young people with forming realistic career aspirations.

## **The Powerful Geography approach implemented at upper secondary school level in Switzerland: Potential and challenges**

**Regula Grob and Ariane Jedelhauser**

Responding to the international GeoCapabilities project, the Powerful Geography approach aims at aligning geography teaching with the career aspirations of students (Boehm, Solem & Zadrozny, 2018). The idea is to thus show the students the importance of geographic knowledge and skills and to emphasize the importance of thinking geographically at schools in order to address issues that are meaningful to them.

In this paper, the potential and challenges of the powerful Geography Approach will be explored in the context of upper secondary school level in Switzerland: Students at Kantonsschule Reussbühl (n=63) were asked to complete a survey on their aspirations for the future. Based on the results, professional geographers who work in the fields indicated most often by the students (n=3; coming from the following fields: natural hazards, science communication, urban and regional planning) were asked to participate in an interview specifying how geographical knowledge and skills is applied in their job.

On the basis of the data from the interviews and the student surveys, geography units that address questions of real-world geography and which allow to apply geographical knowledge and skills were developed and trialled.

Finally, the conceiving, development and enactment of the Powerful Geography approach at upper secondary school level in Switzerland will be discussed with its potential and challenges. This last part will be contextualized in the framework of curricula, teaching traditions and educational policy.

## **Analysing expert' views on a renewed Dutch geography curriculum through an Anthropocene lens**

**Gijs Van Campenhout, Tine Béneker and Rob van der Vaart**

The Dutch geography curriculum for upper secondary level was designed almost 20 years ago. Since then, besides some adjustments, no fundamental changes have been made to this curriculum. The 150th anniversary of the Royal Dutch Geographical Society in 2023 and an expected national curriculum renewal in the coming years, provide the occasion for a renewed discussion about the geography curriculum. A symposium on the renewal of the Dutch geography curriculum, with teachers, curriculum experts, teacher trainers and academic geographers, took place in March 2023. In preparation for this symposium, we asked geography/geoscience scholars to give, in a short essay, their personal views on the questions and content that young people should be learning about in geography in upper secondary school in the decades to come. We thereby did not ask them to reflect on the existing examination programmes nor to delve into developments in the school subject, but to simply, from the perspective of their daily work in geography/geosciences, indicate what content they consider worthwhile for pupils, now and in the future. Perspectives from both earth sciences and social sciences are represented in the essays. Current societal and spatial issues, such as migration and climate change, are discussed in changing contexts focussing on the Netherlands, Europe and the world/earth. Interestingly, the authors argue for the implementation of both classic geographical 'content' and new concepts. Further, many of them explicitly address the kind of (geographical) questions students should start asking and be working with in the classroom. In this presentation, we apply an Anthropocene lens to analyse the 20 essays. From a curriculum analytical view, we can distinguish conceptual, empirical and procedural knowledge(s) in these essays and distil characteristics of 'powerful (disciplinary) knowledge(s).



## **Unravelling the Complexity of Teaching Geography Through a Professional Vision of Domain-Specific Deep Structures**

**Sebastian Streitberger**

Every day, geography teachers deal with complex content (Ohl 2013) in an already complex classroom environment (Doyle 1980). Within this complexity, however, teachers may struggle to focus on classroom situations that are truly relevant for learning, one being domain-specific educational deep structures (Mehren/Mehren 2020). Professional Vision (PV) can help teachers to identify (i.e. notice) such situations and interpret them in an ad-hoc- and knowledge-driven manner (i.e. knowledge-based reasoning; e.g. Gegenfurtner et al. 2020). While there is research with regard to PV from other scientific fields (e.g. Gießler 2018), a geography education perspective is still rudimentary (Scholten 2020) and one on geography-specific educational deep structures entirely missing so far. Therefore, the presented study explores what a Geography PV could look like, to what extent geography teacher trainees notice domain-specific deep structures and in what way their PV can be fostered.

In order to do that, an explorative pre-post-intervention study with 45 geography teacher trainees is conducted. In it, the trainees analyse a video vignette from a geography lesson via an open projective questionnaire before and after a seminar intervention, in which the trainees plan, teach and analyse their own geography lessons. The obtained qualitative data is then evaluated using qualitative content analysis with deductively and inductively formed categories (Kuckartz 2018); deductive categories result, for example, from the competence model of PV, whereas inductive categories are a consequence of the trainees' open analyses. Experts' analyses (n = 7) of the same vignette serve as a benchmark for the professional development of the trainees. Results from the study will be presented in order to critically reflect on research methodology and intervention as well as to discuss Geography PV as an adequate means of dealing with complexity within geography education.

### **Session 6a: Knowledge production, sharing and exchange in geography education**

#### **Creating stories of educational change in and for geography: what can we learn from Bolivia and Peru?**

**Grace Healy, Nina Laurie and Jess Hope**

This paper will explore the potential opportunities for embedding geography education outputs within contemporary geographical scholarship to provide a disciplinary resource for school teachers' geography curriculum thinking and pathways to impact for academic geographers. In particular, the paper will draw upon two projects to show the empirical depth that can be achieved by developing resources that give teachers and students an insight into the particularities of places (in this case Bolivia and Peru) in relation to sustainable development agendas via a focus on the co-production of geographical knowledge. Through engaging with research pursued by geographers, this paper sheds light on the relationship between environmental justice and sustainable development, which can play an important role in shaping geography teachers' curricular decision-making and recasts expertise where Indigenous leaders, and those with first-hand experience of their local environment, are at the forefront of complex decisions and conflicts to determine trajectories of sustainability.

## **Extracurricular learning "next level": Using mobile digital game-based learning to teach complex content**

**Phillip Bengel**

The central challenges of the Anthropocene, such as the transformation of our environment and digitization, share a common characteristic: they all show a high degree of complexity. This makes it mostly impossible to deal with them with solution approaches based on single non-connected perspectives. In order to enable the younger generations to view these problems from as many relevant perspectives as possible, to understand them, and ultimately to deal with them constructively, innovative educational measures must be created. Moreover, the success of these measures must be shared equally among all learners, without being limited by their individual biographical or attitudinal characteristics. So, the question arises how appropriate educational approaches would have to be designed, what are the conditions for success associated with them, starting from the conception, but above all from the learners themselves?

From 2019 to 2022, a multi-perspective game-based learning concept for mobile digital education was developed at the Department of Geography at Philipps University Marburg, Germany. The "SENSO-Trail" (Science Education and Natural System Observation), was implemented in the university's own research and teaching forest and finally examined with a quantitative study in a pre-post, and follow-up design. In comparison with a control group, the acquisition of subject-specific knowledge of  $n = 94$  students, as well as the influence of potential person-related parameters were analysed longitudinally. The results provide a basis for designing contemporary approaches for extracurricular settings, not only in a geographical context, and thus form the starting point for further research in this, relatively young field of education with mobile technologies.

## **Can interest in the human impact on the environment be promoted?**

**Martin Xaver Müller**

The human impact on the environment is a central topic for teaching in the Anthropocene.

At the same time, the human impact on the environment is of strong interest among pupils at the end of the 5th grade, especially when compared with other fields of interest (Hemmer et al 2010). The research of interest has a long tradition in the domain of geography and geoscience education (Bayrhuber et al. 2002, Hemmer et al. 2019, Lorenz et al. 2016, Trend 2005) and contributes domain-specific insights for the broader field of the person object theory of interest POI (Krapp 2011; Prenzel et al. 1986).

The presented extensive intervention study (quasi-experimental intervention study with control group, geographical field work and excursions,  $n = 280$ ) investigates effective ways of fostering interest in geoscientific contents such as the human impact on the environment.

Results of the study call for an extended conception of the human-earth system, which explicitly incorporates the anthroposphere. Proceeding from these deliberations, concrete and empirically validated didactical measures to foster interest in the human impact on the environment are presented and discussed.

## **Geography Education through the Anthropocene Lens. Fostering Transformative Learning with Participatory Research in Middle Schools**

**Fabian Pettig and Daniela Lippe**

The Anthropocene presents us with interwoven challenges and emphasizes the need for rethinking and changing the way we live in and engage with our environment (Latour 2018). A social-ecological transformation represents such a collective rethink, challenges us to re-negotiate our routines and practices and to work towards an ecologically and socially just future. This focus, however, demands a change in educational settings and within sustainability-oriented pedagogies.

Instead of an instrumental appropriation of individual students 'for sustainability', the challenges we face require emancipatory and transformative approaches that value students as agents of their own lives as well as of societal change and enable them to negotiate the(ir) possible future(s) (Wals 2010). We argue that this could be achieved by implementing a pedagogical model for fostering transformative learning in the geography classroom (Pettig 2021), which revolves around exploring one's own positionality, critically reflecting on possible solutions and different ways forward, and experimenting with alternatives (ibid.). Thus, a transformative geography education through the "Anthropocene lens" (Leichenko and O'Brien 2020) empowers young people to deal with the uncertainties and challenges of the Anthropocene and to participate in negotiating a social-ecological transformation (Pettig and Ohl, accepted).

With the aim of better understanding the role of transformative learning in a social-ecological transformation we are conducting participatory Photovoice research as part of the interdisciplinary project EAT+CHANGE (10/2022–9/2025). Together with middle school pupils from Graz (Austria) we focus on questions and challenges of (un)sustainable food consumption in the everyday life and communities of young people and want to explore change on a micro-level. This contribution presents the conceptual foundation, the research design and first empirical insights of the project.

### **Session 6b: Digital geographies: Mobilities, mapping and participation in the Anthropocene**

#### **Meta-analysis of the Impact of Geospatial Technologies on Learning Outcomes**

**Qianyi Ma**

Many scholars have been using geospatial technologies (GST) to improve students' learning outcomes in the Web 2.0 age. However, many studies focus on the effectiveness of GST on cognitive domain of learning outcomes, which poses challenges to GST efficacy evaluation. This study aims to examine the effectiveness of GST on students' learning outcomes and identify potential moderators through meta-analysis. The results indicate that GST has a positive effect on students' learning outcomes on a medium scale, while its effects on the cognitive domain were more significant than the non-cognitive domain. Moreover, we identified variable factors such as participant's country/region, education level, intervention duration, and type of geospatial technology to analyse whether the four moderator variables had an impact on the effectiveness of GST. The moderator analysis results show that GST's effectiveness on students' learning outcomes depended on participants' country/region, intervention duration and type of geospatial technology. This means that participants' country/region, intervention duration and type of geospatial technology had a significant effect on GST's effectiveness, while students' education level did not have a major impact. Thus, geography educators should promote a pedagogical model with GST, and take into account the individuals' country/region, while setting a reasonable intervention time of using GST in teaching. Teachers should also be

flexible in using different types of geospatial technologies to achieve positive students' learning outcomes.

## **Educating teachers to use GIS in teaching about climate change: A comparison between**

**Mary Fargher and Rafael de Miguel Gonzalez**

It is now more widely accepted that climate change education is crucial to re-focusing teaching and learning in the light of the current global climate emergency (Reid, Dillon, Ardoin & Ferreira 2021). The UN Agenda 2030 Sustainable Development Goal (SDG) 13 implies the need for urgent action to combat climate change including a target to improve climate change education (Sustainable Development Solutions Network (SDSN) 2015; UNFCCC 2015). Despite this exigency, climate change education is not always prioritised in schools in ways that may achieve these targets. It can be argued that school geography is a vital medium through which high quality climate change education could be channelled.

This paper presents the findings of a UCL Global Engagement Fund Project – Connecting on Climate Change Education which compared experiences of Masters students at UCL, London and Zaragoza, Spain in using GIS to teach about climate change. In this paper we critically explore the role of GIS in teaching about climate change and the opportunities and challenges experienced by teachers in pursuing this aim. We begin by setting this research in the context of where the contemporary status of GIS in geography education stands within the UK and Spain. We then present analyses of data collected through workshops, focus groups and interviews which identify the opportunities and challenges of using GIS to teach about climate change as experienced by participants. Based on these findings and other work in the established literature on using GIS to teach about sustainability through hierarchical geospatial enquiry (Hwang, 2013), we argue that this approach has the potential to strengthen the connections that digitally-conscious geography teachers can make between using GIS and developing their students' epistemic access (Fargher and Healy, 2020). The paper concluded with recommendations for future teacher education on the use of GIS in climate change education in school geography.

## **What factors play a role in the perceived limits of implementing GIS in education by geography teachers?**

**Veronika Bernhäuserová, Lenka Havelková and Martin Hanus**

The potential of geographic information systems (GIS) for geography education is indisputable. Previous research showed that teaching with GIS can help students improve a variety of (not only geographical) reasoning skills. It helps students obtain, process, analyse, evaluate and present information related to a specific topic, thus it develops their spatial thinking. However, the skills acquired in this way are related not only to geographical spatial thinking. Students can also use them within subjects and can help them, for example, to improve their critical thinking. Despite numerous GIS benefits for teaching and learning, its implementation in Czech schools is still rather sporadic.

The paper will present the results of the Q-methodology, specifically with a focus on individual factors that influence the perception of limits (or group of limits) of the implementation of GIS in education. The research sample included 41 Czech lower and upper secondary school teachers, and Czech pre-service teachers. The participants were asked to sort the 70 limits into a pyramid from the least to the most important based on the question "What do you personally perceive as the most important limitations of implementing GIS in your teaching?". These limits were selected according to the findings of a systematic review conducted by the authors on this issue and were supplemented

by the results of a questionnaire that was filled in by Czech in-service and preservice teachers. The results of the study can help to understand the issues of GIS implementation in the broader educational environment and contribute to the appropriate adaptation of training courses for in-service or pre-service teachers.

### **Students' strategies of familiarization with a general-reference map of an unknown area**

**David Troksiar, Martin Hanus and Lenka Havelkova**

One of the vital goals of geography education in the Anthropocene is to teach students how to think spatially. Students with developed spatial thinking can analyze, interpret, and thus understand spatial patterns. However, there is still a lot to be understood about spatial thinking and its development using spatial data, e.g., in maps. Although maps are a traditional object of the research, still little is known about the process of students' familiarization with a new map. And yet, it is not uncommon to use general-reference maps as the first material to examine physical or social features of a new region during geography class.

This study focuses on what strategies students use when getting familiar with the yet-unknown general-reference map. One-minute-long familiarization process of 20 upper-secondary students was recorded by an eye-tracking camera and was followed by 12 tasks with the given map. The eye-tracking experiment was accompanied by a follow-up questionnaire to get further details about their strategies.

The study provides answers to questions about the time that students allocated to the individual map elements as well as insights on what they have observed directly in the map. Recurrence analysis proved that there were several areas in the map that they kept coming back to. When it comes to the order of the visited areas of interest (map face, legend, hypsometric tints legend, graphic scale, etc.) participants chose a different approach. The final question that will be answered is how their strategies during the familiarization affected the results or strategies adapted in a later test with the given map.

The study should be of interest to both educators and cartographers, as teachers with better knowledge of the map familiarization process can better guide students to think spatially, and cartographers can make educational maps that better suits navigating ourselves in the Anthropocene.

## **Session 7a: Geography education, health and risk in the Anthropocene**

### **Ecological Civilization: Engaging the complexity of ecological crisis**

**Benjamin Green**

This work begins with an overview of the developmental genesis and current scope of contemporary transdisciplinary complexity research. This is followed by a framing of the ecosocial relationality of ecological crisis within global risk society as necessitating an ecopedagogical foundation for systemic climate adaptability. This understanding is then further developed within a positioning of ecological civilization (EC) as an ecopedagogical philosophy aimed at addressing the climate crisis through a civilizational shift in culture towards a responsible, hopeful, and creative agentic global praxis of teaching, research, and action. Lastly, this work incorporates a pragmatic lens of social transformation towards the real-world development and institutionalization of EC within a top-down/bottom-up approach to systemic social change.

## **Planetary Health (PH) in Geographical Teaching-Learning Settings?**

**Christian Wittlich, Hannah Lathan and Leif Mönter**

The World Health Organisation considers climate change to be the greatest health threat to humanity (2021). It names six climate change-induced diseases with striking mental and physical health consequences that can already be diagnosed in all inhabited areas of the earth. Medical researchers at Harvard University have developed a concept of Planetary Health (PH) that addresses these problems (Cole 2019). The planetary health approach describes the integrity of the relationships within, of and between planetary ecosystems as a prerequisite for the well-being of human civilisation (Traidl-Hoffmann 2021). In doing so, it aims to develop solutions and adaptation strategies to global health risks. Educational Sciences have not yet dealt with this new approach, especially with its transfer into school contexts. Yet the PH approach is highly adaptable to established educational concepts, such as Education for Sustainable Development (ESD). The school subject geography, as a lead ESD subject (Aktionsrat Bildung 2021; Brock 2018; Bagoly-Simó 2014) and as the main subject of climate (change) education (Siegmund & Siegmund 2021; Klüsener & Wittlich 2023), is particularly predestined to deal with the PH approach.

This paper aims to provide substantial input in the context of discourses on the Anthropocene. Therefore, it presents a theoretical extension of ESD to include PH and its added value. Based on this conceptual extension, health-relevant adaptations are presented using the example of heat island effects in urban areas and on the basis of biological invasions (neobiota) in rural areas. Teaching-learning settings designed for this purpose can strengthen the sustainability awareness and actions of young people beyond the goals of ESD and help them to make a positive contribution to their individual and society's health, in the context of climate change.

## **What might disaster risk reduction education look like in the Anthropocene: a vision based on the review of school geography curriculum in China**

**Qian Gong**

In view of the destructive conditions of the Anthropocene and the desperate attempts of the world community to cope with them, education for sustainable development is significant for the future of mankind. The Sendai Framework for Disaster Risk Reduction 2015-2030 points out that “disaster risk reduction is essential to achieve sustainable development”. The importance of Disaster Risk Reduction Education (DRRE) has been emphasized in several international agendas, frameworks, conferences, United Nation programs, etc. The integration of DRR into the school curriculum may be the best way to ensure that DRRE in schools can be sustained. In order to investigate the content evolution of DRR in the school geography curriculum in China, this research used the five dimensions of DRR learning framework as a platform and a conceptual premise upon which to review the primary and secondary school geography curriculum standards from 1986 to the present. Using the method of qualitative content analysis with the support of the software NVivo 12, we came to the following results: the DRR-relevant content in the geography curriculum standards that used for analysis in this research had undergone constant changes and finally reached a relatively stable state; the changes of DRR-relevant contents in primary school, middle school and high school curriculum presented different characteristics. In response to the demands of the Anthropocene for education, the future geography curriculum is necessary to realize that the term disaster does not describe the natural event per se, but instead its impact on/consequences for infrastructure and society. It is bound to add more DRR-relevant content that belongs to the ‘action’ dimension and the ‘participation’ dimension,

especially at the primary and middle school stages, and to systematically incorporate the DRR-relevant content of the ‘integration’ dimension into the school geography curriculum.

### **Conversations with geographers: do you teach the Anthropocene in your classes?**

**Hermione Xin Miao**

This paper is based on a series of collaborative research-practice conversations, starting with a question: “Do you teach the Anthropocene in your classes?” The answers from international and Chinese geographers gave insights into factors facilitating or obstructing their agency in making the Anthropocene visible in their classes.

The study bridges different spaces of geography education by interviewing three kinds of geographers: university-based academic geographers, geography teachers teaching in schools, and professional geographers working in the fields related to education. Starting from their answers to the “do you teach” question, participants express their willingness, hesitation and/or reluctance on teaching the Anthropocene to geography students and teachers. The conversations cover three temporal dimensions to know their past experience of knowing (and teaching) the Anthropocene, current circumstances and future plans to include or exclude the Anthropocene in their teaching.

The preliminary finding is that both university and professional geographers know about the Anthropocene but do not always introduce it to their students, who will be or already are geography teachers at school. However, school geography teachers who are not less informed about the Anthropocene express curiosity and the possibility to bring this topic into their classes. This study investigates the intentional knowledge gap with the existing teacher agency framework (Priestley, Biesta and Robinson, 2015). The framework goes through three temporal dimensions — participants’ past experiences, current situations and future aspirations — to analyse their choice to teach/exclude the Anthropocene in their work. By doing so, this study contributes to positioning the Anthropocene in educating geography teachers as well as its place in school geography curricula.

### **Session 7b: Making and shaping curriculum for the Anthropocene**

#### **Imagining curriculum making scenarios for the human epoch**

**David Lambert**

This paper makes a social realist argument for the radical reconceptualization of teaching, stressing the obligations teachers have in relation to enacting the school curriculum. The proposition is for teachers to engage more thoroughly with knowledge questions and adopt an approach to knowledge that engages its purposes and dynamism: in short, its sociality.

As the curriculum makers, teachers need to be knowledge workers. Knowledge working requires teachers who are prepared to examine the educative nature of the content of their lessons: how it contributes to the educated individual (Lambert and León, 2023). The aim is to equip students with an enhanced capability ‘to be and to do’ (after Nussbaum and Sen, 1993), especially in relation to the ‘epochal challenges’ of the day (see Bladh et al, 2018). The latter includes issues such as the climate emergency, biodiversity loss and the emergence of post-truth (post-literate) politics in addition to urgent issues of social justice bound up with class, origin and race.

Social realists have argued for the need to engage both teachers and students with what has been called powerful knowledge (PK). However, it is increasingly appreciated in specialist disciplines,

from medicine and engineering to social sciences and the arts, that indigenous and community specific knowledges also have power in their own right (Sleeter and Zavala, 2020).

Furthermore, teachers need to treat students as ‘subjects’ (or agentive) in their own right: with knowledge, experience and access to localised funds of knowledge that may be unfamiliar to the teacher. This is not only a pedagogical problem. It is a curriculum problem, for if PK cannot be shown to relate to other ways of knowing then it may be left aside, ignored and rejected as ‘irrelevant’. It is in this context the re-visits the ‘three future scenarios’ heuristic (Young and Muller, 2010) and proposes an expanded Future 3 conception of curriculum making.

## **Research on Curriculum Models for Interdisciplinary Thematic Learning in Compulsory Education - Taking "Global Climate Change" as an Example**

**Xin Yang, Yushan Duan and Rong Ding**

Interdisciplinary thematic learning has the characteristics of breaking down disciplinary boundaries and solving complex problems that cannot be solved by a single discipline. Its approach from a multidisciplinary perspective helps to clarify the nurturing functions shared by various disciplines and helps to promote students to reach higher-order final learning goals. However, there is a lack of research on curriculum design models for the transformation of traditional sub-disciplinary curriculum teaching into interdisciplinary curriculum teaching in China. Based on this, the article uses the "KNOW/DO/BE" framework as the design concept, and constructs an interdisciplinary thematic learning curriculum model of “select a topic—select curriculum standards—create a curriculum framework—design an assessment model—set questions—generate teaching activities”. The findings suggest that there is no fixed curriculum model for interdisciplinary thematic learning. The prerequisite for the implementation of interdisciplinary thematic learning is a proper understanding of the relationship between subject teaching and interdisciplinary teaching. And the school curriculum, curriculum content arrangement, teaching infrastructure and teachers' awareness of interdisciplinary teaching are necessary to ensure the implementation of interdisciplinary thematic learning.

## **Teaching the Anthropocene in the Geography Curriculum Assessment and Policy Statement (CAPS) - myth or reality?**

**Clinton van der Merwe**

The Curriculum and Assessment Policy Statements (CAPS) espouse the ‘new’ curricula of a democratic South Africa. CAPS was conceptualised with widespread public consultation with pupils, parents, teachers, subject advisors and methodologists, as well as curriculum experts after the demise of Apartheid in 1994, when South Africa received Nelson Mandela (her first democratically elected President). CAPS was introduced in the South African Education System in 2012. One of the central tenets of CAPS, was to improve the continuity and progression of conceptual knowledge and development of what pupils are taught over 12 years of schooling, in any particular discipline. This paper explores the nature and depth of how the Anthropocene is represented and taught in the Geography (Further Education and Training – FET) band. The FET educates Grade 10 to 12 (children aged 16 to 18) learners, in all aspects related to Geography. Through in-depth textual analysis of the CAPS document, this paper will unravel the extent and depth to which the Anthropocene is unpacked and detailed in Geography, so as to prepare South African learners to become critical, empowered and responsible citizens – required for the 21st Century world (and beyond).



## **The reformed geography curriculum in the Republic of Croatia - is it ready for the Anthropocene?**

**Ivan Ivić**

Consistent with the geography rationales toward purposeful choices in ways that matter to us (Gersmehl, 2019) and the key choices of the modern world largely related to the strong influence of human actions on the physical elements of space, the topics gathered under the common denominator of the Anthropocene become an intriguing topic for reflection on national geography curricula around the world. The Croatian national curriculum is no exception. Earlier analyzes of the National program for Geography have shown that the issues of the impact of rapid growth and development on the physical elements of space have been presented in a relatively modest scope, and that it is difficult to speak of a systematic and integrative approach or a value component in the understanding and application of the above content (Baranović, 1994). Only the satisfactory results in the relevant tasks of the final state graduation exam, point to the systemic problems of the national program in force until the 2022/2023 school year. Against the background of the recent reform of the national geography curriculum, using the methodology presented in the paper of Bagoly-Simó (2021), the new geography curriculum in the Republic of Croatia was analyzed. Compared to the 50 national subject curricula analyzed, it is one of the most comprehensive taking into account topics related to the Anthropocene phenomenon. It was found that the particular value of the new national curriculum is that in most of the key topics the historical component is also taken into account, which contributes to the better understanding of the processes. Knowledge and skills are placed in the context of values that serve a broader understanding of current problems (Mitchell, 2022). In this sense, it can be stated that the Anthropocene is presented very comprehensively in the new curriculum, still without a clear principled connection of the key spatial processes.

## Posters

### **Preservice geography teachers' exposure to problem-solving and various teaching styles**

**Tomáš Bendl, Lenka Havelková and Miroslav Marada**

Problem-solving is often seen as a key competency for successful life in the Anthropocene. The vast number of scholars and publications emphasize the crucial importance of fostering problem-solving skills, especially in geography education. It is therefore surprising that despite this importance, the empirical research that would focus on whether and how the problem-solving skills are being developed during geography lessons, is inadequate. Therefore, the main aim of this study is to identify how preservice geography teachers perceive the development of their problem-solving skills and how had the predominant teaching style of their upper secondary geography teacher hindered this development. Preservice geography teachers were selected as a target group since we consider them as key players in recontextualising geography education in Anthropocene. In order to identify and characterise specific problem-solving skills and in order to classify preservice geography teachers according to the specific teaching style Roberts (2006, 2013) theoretical framework was adopted. Based on this theoretical framework a questionnaire consisting of statements representing individual aspects of problem-solving skills and different styles of teaching was developed. The empirical results were evaluated with the help of descriptive and multidimensional statistics (t-tests, cluster analysis). Results suggest that the majority of Czech preservice geography teachers believe that they have been exposed mainly to the closed style of teaching geography, which has been empirically proven not to foster problem solving skills as much as the other styles. Based on our findings, we conclude with discussing the possible reasons of these unfavourable results and we suggest several recommendations to improve the situation.

### **Climate Change Education through Inquiry-based Learning Promoting Action: A Systematic Literature**

**Johannes Shulz**

In view of the manifold ecological, economic, social and political challenges humanity is currently facing, the desire for a blueprint for a socio-ecologically compatible model of society is growing louder. One of the greatest problems in the context of multiple crises is man-made climate change (Band & Wissen 2017). Education makes a crucial contribution to mitigating and adapting to this symptom of the Anthropocene (Crutzen 2002; WBGU 2011). Nevertheless, educational approaches that address the issue of climate change are challenging because it is a highly complex topic (Meyer et al. 2018; Ohl 2013). Further difficulties are, on the one hand, reducing the spatio-temporal psychological distance to the topic of climate change and, on the other hand, reducing the discrepancy between climate-relevant knowledge and action (Chiari et al. 2016; Loy & Spence 2020; Renn 2018). To address these challenges of Climate Change Education, the approach of Inquiry-based learning can make a valuable contribution (Brumann et al. 2022). Therefore, I am asking the following research question in a systematic literature review: Which common goals, approaches and challenges of Climate Change Education through Inquiry-based Learning can be identified that are related to prerequisites of action in the context of the socio-ecological transformation?

In my poster I want to present the theoretical background, the methodology and preliminary results of the systematic literature review study, that I am currently conducting on the topic (Xiao & Watson 2019). Therein I will set a focus on conclusions for geography education.

## **Learning to argue for social digital participation with virtual excursions on climate change? A quasi-experimental intervention study to promote subject-specific and digitalisation-related competences**

**Marvin Schlamelcher, Janis Fögele and Nicoletta Bürger**

One of the central phenomena of the Anthropocene is human-induced climate change. This not only poses a challenge to current life on Earth, but also affects all future life, unless radical greenhouse gas reductions are made soon (Rahmstorf & Schellnhuber, 2019). But this is not scientific news. The consequences of global warming have been known for some time and yet there are still people today who do not want to admit this (ibid.; Neu, 2016). They dispute the scientific consensus and reject any facts regarding climate change (ibid.). These so-called climate change deniers often use social media to spread their opinions. This is problematic in that small groups of opinionated individuals can shape digital discourses and children and young people also use social media to gain information. In order to proactively counteract the potential danger associated with this, we developed two teaching sequences on this topic in an experimental control design. The goal of both sequences is that students learn to develop arguments for climate change so that they can participate in digital climate change discourses and refute sceptical statements. This goal is attempted in the experimental group with the help of a virtual excursion and in the control group with analogue material. Whether and, if so, to what extent the experimental group performs better than the control group will be presented at the conference along with the structure of the sequences.

## **Low-cost experiments and their potential for interdisciplinary climate education.**

**Christian Wittlich**

Global climate change is one of the greatest societal challenges of the 21st century. The World Health Organisation (WHO) sees it as the greatest health threat to humanity. Despite this explosive nature, climate topics are still rarely dealt with in schools. Using marine topics and specially developed low-cost experiments as examples, this article aims to show the simple ways in which climate education can take place in a student-, action- and solution-oriented way. The article also takes motivational aspects and results from student interest research into account. First of all, the terminology of climate education should be introduced and at the same time the reference to education for sustainable development should be established. From a geography didactic perspective, various practical experiments can then be clearly presented. After a conceptual presentation of low-cost experiments, which are oriented towards established working methods from chemistry didactics, the contribution will become concrete using the example of a self-designed and often successfully reproduced experiment on the topic of "ocean-carbon dioxide feedback" (a positive and thus greenhouse-reinforcing feedback in the climate system). In the process, competence orientation will also be considered on a supra-subject level and the methodological-didactic added value for use within teacher training will be discussed on a meta-level.

## **Conceptions of geography teaching: Exploring the ecological validity of an assessment tool**

**Petr Knecht, Michaela Spurna, Veronika Korvasova and Eduard Hofmann**

The poster introduces a research project recently funded by the Czech Science Foundation (2023-2025) which aims to verify the ecological validity of an assessment tool for exploring conceptions of geography teaching in pre-service and in-service teachers. Using Catling's (2004) typology of conceptions of geography teaching, we created a reliable and valid self-report questionnaire (Knecht

& Spurná, 2022). So far, there has not been any assessment tool that can measure the conceptions of geography teaching that would be verified in school practice.

This project aims to validate whether the data acquired in a self-report questionnaire correspond with teachers' performance in the classroom captured by four independent observers. We will conduct observations of three geography lessons and interviews with 27 lower secondary school teachers, stratified according to their preferred conceptions (nine conceptions with three respondents each) and 30 pre-service teachers.

The practical value of this research lies in the fact that it can help every geography teacher enhance their teaching and bring their students to an advanced level of geographical thinking. The assessment tool helps the teachers analyse their prevailing conceptions of geography teaching and offers them alternatives to different conceptions of geography teaching, utilising the "looking at and looking along" approach (Puttick, 2013). This approach motivates teachers to contest their prevailing conceptions of geography teaching and respond to the challenges of teaching for the Anthropocene.

### **Investigating Who Teaches Geography Teachers: Exploring the Social Representation of Teachers and Teaching in Initial Teacher Education**

**Michaela Spurná and Petr Knecht**

The aim of the poster is to present methodology and preliminary findings of a research project supported by the Czech Science Foundation (2023-2025) focused on the social representations of teachers and teaching held by teacher educationists.

Geography teachers have a significant impact on shaping students' thoughts and beliefs about geography and the world in the Anthropocene. To effectively develop students' geographical thinking, geography teachers undergo training in specialized departments. The process of initial teacher education (ITE) is crucial in shaping the professional identity of student teachers (Izadinia, 2013). It involves not only how one sees the self but also others' perspectives of the teachers (Pelini, 2017). Educationists in ITE represent their meanings, images, conventions, values, beliefs and symbols about geography teachers and teaching. The environments and cultures of university departments are socially constructed and play a key role in how the student teachers will teach geography.

We answer the following questions:

1. How the social representations of geography teachers and geography teaching can be constructed?
2. What are the sources of social representations?
3. What methods can be used to investigate social representations?

The preliminary findings of this study focus on the exploration of nine university departments in Czechia that provide geography ITE, as observed during on-site visits. The findings will open the area for discussion about departmental artefacts and social representations of teachers and teaching.

### **Primary School Students' Conceptions of Mobility in the Context of Education for Sustainable Development: A Systematic Literature Review**

**Elsabeth Schuster**

The emission of carbon dioxide, air pollutants and noise as well as land consumption and resource consumption are central negative environmental impacts of the transport system (Flore & Kröcher, 2021). According to the curricula and frameworks of primary school (GDSU, 2013; KMK, 2012)

these challenges should be addressed and become a topic of instruction under aspects of education for sustainable development (ESD). Following a critical-emancipatory ESD the aim is to increase reflexivity in two regards - of basic societal assumptions about mobility on the one hand (e.g., use of public spaces) and individual mobility practices on the other hand (Krämer, 2018). This should stimulate a process of changing students' meanings, patterns of perception and interpretation about mobility (Mezirow, 1997; Singer-Brodowski, 2016). For this reflection process, however, it is first necessary to clarify which conceptions primary school students have about mobility in order to derive implications for school practice. Since the conceptions of primary school students on the topic of mobility have already been studied in different spatial contexts (e.g., Fusco et al., 2012), a systematic literature review will first provide an overview of the current state of research. The studies identified through database searches (Web of Science, Scopus, PsycINFO, ERIC) are analyzed using qualitative content analysis regarding the goals of mobility education, the constructs studied, the research methods used, and key findings about students' mobility conceptions. Preliminary evidence from existing studies suggests that sustainable mobility is associated with reduced pollution and electromobility, but not with a redistribution of public spaces at the expense of automobile traffic (Sipone et al., 2019; Sovacool et al., 2019).

### **Building and sustaining an *emerging scholar network* in geography education**

**Hermione Xin Miao, Melissa Hanke, Gillian Kidman, Martin Hanus**

Communication and knowledge exchange between researchers are crucial to scientific development. Communication and knowledge have recently changed from face-to-face to hybrid or online. For the emerging scholar, communication primarily occurs between the supervisor and the student during the doctorate program. At the same time, important communication with peers can enable strong connections for non-knowledge-related aspects of the doctoral journey. Thus, we are establishing an international emerging scholar support network for communication and knowledge exchange.

We invite all IGU-CGE members (e.g., emerging scholars and Steering Committee members) to start imagining and designing a supportive community together to facilitate the emerging scholar's doctoral and early career journey. The following events are being considered but not limited to:

- Arrange regular meetings/events via co-convenors to facilitate peer communication
- Build a mailing list and a WhatsApp community to share events and relevant news
- Collect questions and topics from emerging scholars to #askGeoEdu
- Distribute #askGeoEdu topics to experienced scholars for a conversational video/podcast
- Establish a tradition of roundtable meetings of emerging scholars in conjunction with the IGU-CGE annual conferences
- Fieldwork collaboration and friendly exploration: encourage local emerging scholars to organise mini-field trips as lunchtime/tea-break events during the IGU-CGE annual conferences
- Any other ideas you have

The emerging scholars' network aims to establish an infrastructure to ensure the power of communities reaches everyone. By empowering everyone in geography education, we aspire to connect emerging scholars across continents to collaborate and build a network for exchange and discussion.

To join the network:

- If you self-identify as an emerging scholar, contact Hermione Xin Miao ([xin.miao@stir.ac.uk](mailto:xin.miao@stir.ac.uk)) or Melissa Hanke ([melissa.hanke@uni-hamburg.de](mailto:melissa.hanke@uni-hamburg.de)) to join the network.
- If you self-identify as an experienced scholar, contact Gillian Kidman ([gillian.kidman@monash.edu](mailto:gillian.kidman@monash.edu)) or Martin Hanus ([martin.hanus@natur.cuni.cz](mailto:martin.hanus@natur.cuni.cz)) to offer to support the emerging scholars network.
- If you identify somewhere in between, contact any of us.

## List of presenters

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## While you are in Oxford...

There is so much to see and do in Oxford. You might want to visit some of the museums or colleges in the city, popular attractions include:

- Exhibitions at the Weston Library, admission is free (Broad Street).  
<https://visit.bodleian.ox.ac.uk/events-exhibitions>
- Book a tour of the Bodleian Library and Radcliffe Camera, approx. £10 (Catte Street).  
<https://visit.bodleian.ox.ac.uk/tours>
- Ashmolean Museum of Art and Archaeology, admission is free (Beaumont Street).  
<https://www.ashmolean.org/>
- Oxford Museum of Natural History, admission is free (Parks Road)  
<https://www.oumnh.ox.ac.uk/>
- Pitt Rivers Museum, admission is free (South Parks Road) <https://www.prm.ox.ac.uk/>
- See the Radcliffe Camera, Radcliffe Square <https://www.bodleian.ox.ac.uk/libraries/radcliffe-camera>

You might want to enjoy some of the green space in Oxford, for example:

- University of Oxford Botanical Gardens, admission cost £6.30 (Rose Lane).  
<https://www.obga.ox.ac.uk>
- Enjoy walking around Oxford University Parks (via Norham Gardens or South Parks Road).  
<https://www.parks.ox.ac.uk/home>
- Go punting from Magdalen Bridge Boathouse, £30 for 5 for an hour (Magdalen Bridge).  
<https://www.oxfordpunting.co.uk/>

You might want to have a coffee in the city:

- Gail's Jericho, 21-22 Little Clarendon Street <https://gailsbread.co.uk/bakeries/jericho/> (this street has several pubs, cafes and bakeries).
- Jericho Coffee Traders (105 High Street). <https://jerichocoffeetraders.com/>
- Missing Bean (Turl Street). <https://www.themissingbean.co.uk/>
- Society Café (St Michaels Street) <https://www.society-cafe.com/>

## Call for Contributions

### Geography Education for the Anthropocene Book Project

Since the turn of the 21st century, the idea of the Anthropocene has become a ubiquitous term to denote in simplest terms, the dominance of human influence on Earth. The Anthropocene is a concept with diverse and contested meanings. The Anthropocene has profound implications for school geography across curriculum, pedagogy and its broader purpose, all of which are connected to the experiences, perspectives and futures of children and young people and their communities. The complexity and scale of the Anthropocene places significant demands on teachers of geography and teacher educators, whose research and practice is of critical importance to, and for, young people's agency and well-being. Through young people globally, geography education has an important role to play in shaping the future and addressing the climate and ecological crises that have to date characterised the nature of the Anthropocene.

We are planning either an edited book or a journal special issue (depending on the level of interest) that explores one or more ideas, such as:

- The place of the Anthropocene in school geography curricula
- Connections between the Anthropocene and critical geography education
- Teaching for the Anthropocene – emotions and affects
- Pedagogical approaches for the Anthropocene
- Teacher professional development for the Anthropocene
- Geographies of education and educational spaces for the Anthropocene

To register your interest in the Geography Education for the Anthropocene Book Project, please complete the form below and give it to one of the Conference Organising Committee members or send Emma Rawlings Smith ([emma.rawlingssmith@education.ox.ac.uk](mailto:emma.rawlingssmith@education.ox.ac.uk)) the same information via email by 14 July.

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