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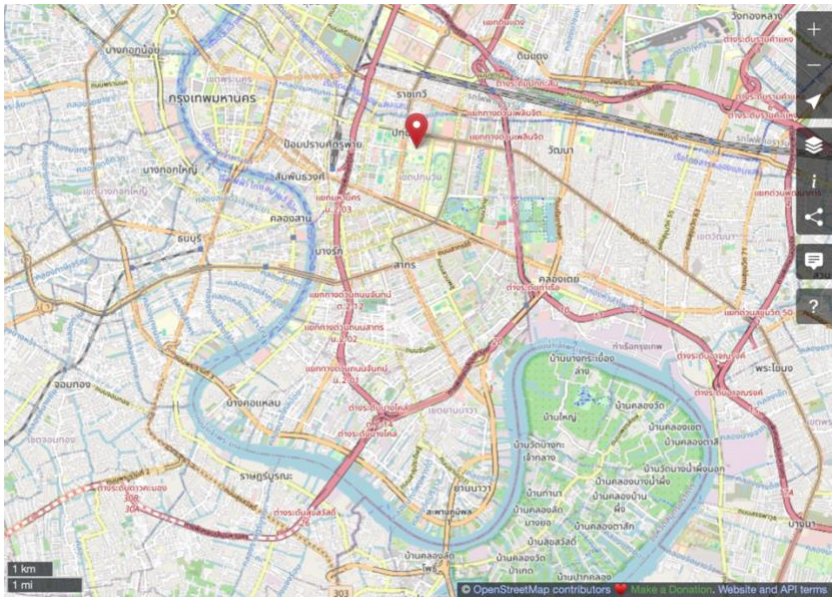
Welcome to the IGU-CGE Conference, Bangkok, Thailand

Educating for Sustainability: Integrating Geographical and Interdisciplinary Knowledge, Practice and Innovation

https://conference.igu-cge.org/



Chulalongkorn University, Faculty of Education

IGU-CGE BANGKOK CONFERENCE 2026

IGU-CGE BANGKOK CONFERENCE 2026

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Welcome

Welcome message from the IGU-CGE Organising Committee

Dear Colleagues,

On behalf of the IGU-CGE organising committee, it is our great pleasure to welcome you to Bangkok, Thailand, for the 2026 IGU Commission on Geographical Education (IGU-CGE) Conference.

This gathering carries a special significance for our community. The last IGU-CGE Conference held in Bangkok took place in 1962. More than six decades later, we are delighted to return to Thailand at a time when geography education in the world is facing new opportunities, challenges, and responsibilities. As we come together across generations, cultures, and educational contexts, we not only celebrate the rich history of international geography education, but also look forward to the possible future we are building together with fellow geography educators.

This year's conference theme *Educating for Sustainability: Integrating Geographical and Interdisciplinary Knowledge, Practice and Innovation* opens up a space to bring together geography teachers, teacher educators, researchers, students, and practitioners from around the world. We have over 50 papers from delegates who live in over 20 countries and regions. At a time of profound environmental, technological and social change, geography education plays an irreplaceable role to help learners understand the complexities of our interconnected world and engage with the challenges of creating more sustainable futures.

Bangkok, a city where tradition and innovation coexist, offers an inspiring setting for these discussions and dialogue. The conference provides an opportunity to connect with colleagues, establish research collaboration, exchange knowledge, and foster international friendship. During the meaningful dialogue across diverse geographical, cultural and educational contexts, we hope the delegates will enjoy the intellectual debates with criticality and care, and develop new perspectives for geography education and geography education research in the years ahead.

We extend our sincere gratitude to all participants, presenters, volunteers, partner organisations, and supporters whose contributions have made this conference possible.

We wish you an enjoyable, productive, and memorable conference and look forward to the conversations and collaborations that will emerge during our time together.

With warm regards,

The IGU-CGE 2026 Organising Committee
June 2026

Welcome message from Chulalongkorn university

Professor Wilert Puriwat, D.Phil. (Oxon), President, Chulalongkorn University:

It is my great pleasure to extend a warm welcome to all participants of the IGU-CGE 2026 Bangkok Conference hosted at Chulalongkorn University, Thailand.

As one of Thailand's leading universities, Chulalongkorn University is honoured to support this international gathering of scholars, educators, researchers, and practitioners who share a common commitment to advancing geography education and sustainability through knowledge exchange and international collaboration.

The conference theme, *"Educating for Sustainability: Integrating Geographical and Interdisciplinary Knowledge, Practice and Innovation,"* reflects the urgent need for education systems worldwide to respond thoughtfully and collaboratively to today's interconnected global challenges. Climate change, environmental degradation, social inequality, technological transformation, and geopolitical uncertainty require new forms of learning that transcend disciplinary boundaries and encourage global responsibility.

At Chulalongkorn University, we strongly believe that higher education institutions play a crucial role in shaping sustainable futures. Beyond academic excellence, universities must foster ethical leadership, intercultural understanding, innovation, and active engagement with society. International cooperation and interdisciplinary dialogue are therefore essential in developing meaningful solutions for complex global issues.

This conference represents an important opportunity to strengthen academic networks and inspire new ideas across diverse educational and cultural contexts. We are especially pleased to welcome participants from many countries around the world to Bangkok, where scholarly exchange can be enriched through both formal discussions and shared cultural experiences.

I sincerely hope that your participation in the IGU-CGE 2026 Bangkok Conference will lead to productive collaborations, inspiring conversations, and lasting partnerships that contribute positively to education and sustainable development at local, regional, and global levels.

I would like to express my appreciation to the International Geographical Union Commission on Geographical Education (IGU-CGE), the organizing committee, partner institutions, sponsors, volunteers, and all contributors for their dedication and hard work in making this conference possible.

May your time at Chulalongkorn University and in Thailand be both professionally rewarding and personally memorable.

Welcome message from Faculty of Education, Chulalongkorn university

Associate Professor Dr. Yotsawee Saifah, Dean, Faculty of Education, Chulalongkorn University:

Representing the Faculty of Education, Chulalongkorn University, I am delighted to welcome all distinguished scholars, educators, researchers, practitioners, and students to the IGU-CGE 2026 Bangkok Conference.

It is a distinct privilege for the Faculty of Education to host this significant international academic gathering under the theme "Educating for Sustainability: Integrating Geographical and Interdisciplinary Knowledge, Practice and Innovation." As the world confronts unprecedented environmental, social, economic, and technological transformations, education remains a powerful force for cultivating informed citizenship, fostering collective action, and advancing sustainable and resilient societies.

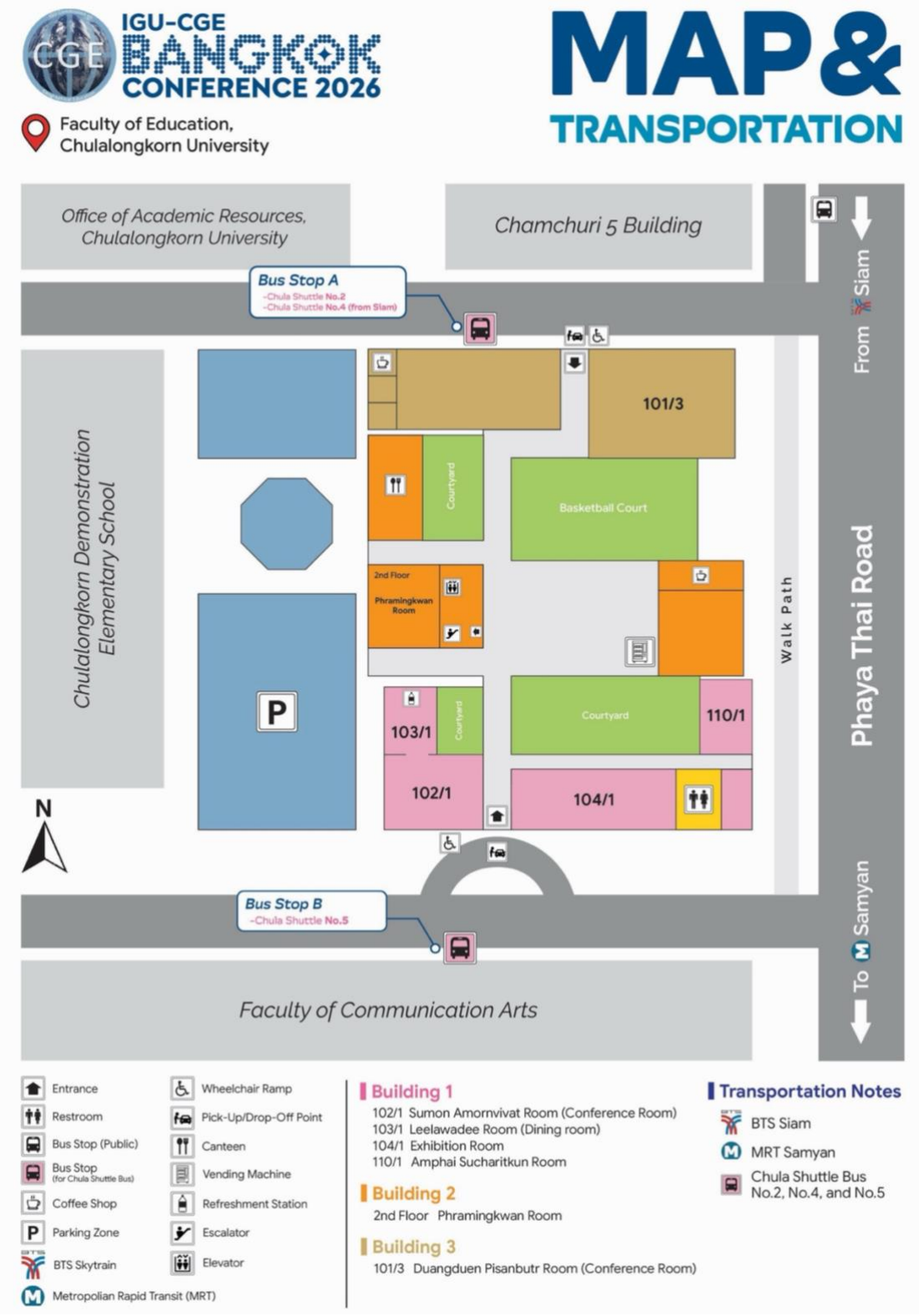
This conference highlights the importance of geographical and interdisciplinary perspectives in addressing both global and local challenges. It also serves as a meaningful platform for scholars and professionals from diverse countries, institutions, and fields of expertise to exchange ideas, share research, and strengthen international collaboration in geography education and sustainability education.

It is our sincere hope that this conference will inspire productive dialogue, new partnerships, and innovative approaches that contribute to the advancement of geography education and sustainable development worldwide. We also hope that your time in Bangkok will offer valuable opportunities to experience Thailand's rich cultural heritage, warm hospitality, and vibrant learning environment.

I would like to express my sincere appreciation to the International Geographical Union Commission on Geographical Education (IGU-CGE), the organizing committee, keynote speakers, presenters, sponsors, staff members, student volunteers, and all participants for their invaluable contributions to making this conference possible.

May the IGU-CGE 2026 Bangkok Conference be a successful, enriching, and memorable experience for everyone.

Map & Transportation



Transportation Guide

Transportation Guide: Access by SkyTrain (BTS) and Subway (MRT)
The Faculty of Education, Chulalongkorn University, is conveniently located in the center of Bangkok and can be easily accessed via both the BTS SkyTrain and the MRT Subway systems.

Option 1: Via MRT Subway (Highly Recommended & Closest)
• Station: Sam Yan Station (BL25)
• Exit: Take Exit 2 (which connects directly to Samyan Mitrtown shopping mall).
• How to get to the venue: * By Foot (Approx. 8–10 mins): Walk through the underground tunnel into Samyan Mitrtown, exit onto Phaya Thai Road, and walk north toward Chulalongkorn University. The Faculty of Education will be on your right.

Option 2: Via BTS SkyTrain
• Station: Siam Station (CEN) (Interchange Station between Sukhumvit and Silom Lines) or National Stadium Station (W1).
• How to get to the venue from Siam Station:
o By Chula Shuttle Bus (Free of charge): Head to the bus stop near Siam Square One/ Faculty of Pharmaceutical Sciences (on Phaya Thai Road) and take Chula Shuttle Bus Line 1 or Line 4, which runs through the campus and passes near the Faculty of Education.
o By Taxi / Tuk-Tuk / Ride-Hailing App (Grab/Bolt): You can easily catch a short taxi ride from Siam Square directly to the Faculty of Education (approx. 5–7 minutes depending on traffic).

Option 3: Via BTS SkyTrain (Alternative)
• Station: Ratchathewi Station (N1)
• How to get to the venue: Take Exit 2 or Exit 4. From there, we recommend using a ride-hailing app (Grab or Bolt) or catching a local taxi down Phaya Thai Road straight to the Faculty of Education.

Suggestions for International Delegates:
• Tip 1: We highly recommend downloading mobile applications such as Grab or Bolt for easy taxi bookings around Bangkok.
• Tip 2: Bangkok's morning traffic can be very heavy. Taking the MRT to Sam Yan Station is the most predictable and time-efficient route to ensure you arrive before the registration closes at 08:15.

IGU-GCE 2026 Conference Programme in Brief

Time	Description	Remark
Field Trip (Tue, 9 June)		
07.30	Registration at Faculty of Education Sumon Amornvivat: Room 102/1, Faculty of Education	
08.00	Depart from Chulalongkorn to Bang Krachao by van	
09.00	Visit Sri Nakhon Khuean Khan Park (enjoy bike peaceful trails)	
10.30	Visit Bang Krachao Farm	
12.00	Lunch at Bang Krachao Farm	
13.30	Back to Chulalongkorn University	
14.30	Arrive at Faculty of Education	
	Note: The schedule is subject to change due to traffic conditions.	
Day 1 (Wed, 10 June)		
08.00	Registration Duangduen Pisanbutr Room: Room 101	
08.30 – 09.00	Opening Ceremony & Welcome Remarks Duangduen Pisanbutr Room: Room 101	
09.00 – 10.30	Keynote speaker: **Kim N. Irvine** Keynote title: *Co-designing Nature-based Solutions for Enhanced Resilience within Low-Income Communities: The Necessity of a Multidisciplinary, Interdisciplinary Approach and the Role of Geography* Duangduen Pisanbutr Room: Room 101	Keynote moderator: Gillian Kidman
10.30 – 11.00	Coffee Break at Leelawadee Room: Room 103/1	
11.00 – 12.30	Parallel Session (Session 1 & Session 2) Phramingkwan 2&3 Room and Amphai Sucharitkun: Room 110	
12.30 - 13.30	Lunch at Leelawadee Room: Room 103/1	
13.30 – 15.00	Panel Session Navigating Complexity: *Potential Benefits and Challenges of Science-policy Organizations for evidence-informed Policymaking in Education: A Case Study of Thailand* Duangduen Pisanbutr Room: Room 101	Sponsored by British Academy and University College London
15.00 – 15.30	Coffee Break & Poster at Leelawadee Room: Room 103/1	
15.30 – 17.00	Parallel Session (Session 3& Session 4) Phramingkwan 2&3 Room and Amphai Sucharitkun: Room 110	
17.30 – 19.30	Networking Dinner at Sumon Amornvivat: Room 102/1	
Day 2 (Thu, 11 June)		

08.30	Registration	
09.00 – 10.30	Keynote speaker: **Fuangarun Preededilok** Keynote title: Bridging Worlds: Interweaving Development Education and Geography Education for Sustainability Sumon Amornvivat: Room 102/1	Keynote moderator: Martin Hanus
10.30 – 11.00	Coffee Break & Poster Leelawadee Room: Room 103/1	
11.00 – 12.30	Parallel Session (Session 5& Session 6) Sumon Amornvivat: Room 102/1and Amphai Sucharitkun: Room 110	
12.30 - 13.30	Lunch at Leelawadee Room: Room 103/1	
13.30 – 15.00	Parallel Session (Session 7& Session 8) Sumon Amornvivat: Room 102/1and Amphai Sucharitkun: Room 110	
15.00 – 15.30	Coffee Break & Poster Leelawadee Room: Room 103/1	
15.30 – 17.00	Parallel Session (Session 9) Sumon Amornvivat: Room 102/1	IGU-CGE SC meeting
Day 3 (Fri, 12 June)		
08.30	Registration	
09.00 – 10.30	Parallel Workshop Session (Workshop1, 2, 3) Exhibition Room: Room 104; Amphai Sucharitkun: Room 110; and Sumon Amornvivat: Room 102/1	
10.30 – 11.00	Coffee Break Leelawadee Room: Room 103/1	
11.00 – 12.00	**IGU-CGE Business Meeting** Sumon Amornvivat: Room 102/1	
12.00-12.30	**Award & Closing Ceremony** Sumon Amornvivat: Room 102/1	
12.30 - 13.30	Lunch Leelawadee Room: Room 103/1	

Parallel session arrangement

Session 1,3 are arranged in Phramingkwan 2&3 Room;
Session 5,7,9 are arranged in Sumon Amornvivat Room: Room 102/1;
Session 2,4, 6,8 are arranged in Amphai Sucharitkun: Room 110

Time: Wed, 10 June 11:00-12:30 [Day 1]
Session 1: *Representing Sustainability in Geography Textbooks: Knowledge, Narratives and Power*
Session 2: *Reconfiguring Geography Education in the Digital Age: Agency, AI and Technologies*

Time: Wed, 10 June 15:30-17:00 [Day 1]
Session 3: *Repositioning Geography Education in Interdisciplinary Times: Knowledge, Boundaries and Futures*
Session 4: *Reimagining Geography Education for Sustainability in the Anthropocene: Knowledge, Pedagogy and Practice*

Time: Thu, 11 June 11:00-12:30 [Day 2]
Session 5: R*econnecting Geography Education with Experience and Place: Emotion, Capability and Hope*
Session 6: *Educating for Climate and Sustainability Action: Teachers, Literacy and Interdisciplinary Pathways*

Time: Thu, 11 June 13:30-15:00 [Day 2]
Session 7: *From Learning to Participation: Rethinking the Role of Geography Education in Youth Participation and Sustainability*
Session 8: *Rethinking Geography Education: Knowledge, Relations and Critical Perspectives for Sustainability*

Time: Thu, 11 June 15:30-17:00 [Day 2]
Session 9: *Geographical thinking in development: student (mis-)conceptions and map-based reasoning*

Time: Fri, 12 June 09:00-10:30 [Day3]
Workshop 1 (Exhibition Room: Room 104): *Co-Mapping the International Communities for Geography Education Scholars*
Workshop 2 (Amphai Sucharitkun: Room 110): *Identifying trusted and emerging pedagogical practices in geography education*
Workshop 3 (Sumon Amornvivat: Room 102/1): *Picturing Resilience: Mapping Educator Perspectives on Climate Adaptation via Visual Q-Methodology*

Time: Wed, 10 June 09:00-10:30 [Day1] Keynote

Keynote: Kim N. Irvine (Thammasat University, Thailand), *Co-designing Nature-based Solutions for Enhanced Resilience within Low-Income Communities: The Necessity of a Multidisciplinary, Interdisciplinary Approach and the Role of Geography*

Venue: Duangduen Pisanbutr Room: Room 101**, 1st Floor, Bld. 3, Faculty of Education**

Keynote moderator: Gillian Kidman

This keynote summarizes the multi-stakeholder co-design process that we have undertaken with a low-income, peri-urban Bangkok community to construct vertical greenwalls for treating and re-using greywater in irrigating community gardens, as well as construction of other Nature-based Solution (NbS) features to manage flooding and blackwater discharges. The stakeholders include a multidisciplinary design team of landscape architects, engineers, business management, and geographers from local universities and government agencies who engaged in an inspiring interaction that very much was driven by the community vision. The co-design process was shaped by weekly meetings with the community committee and several larger community workshops over a three-year period in which NbS designs were iteratively discussed, presented, revised, and re-discussed, to final implementation.

An important theme of Geography is Human-Environment Interaction and in our project, Geography was well-situated to bridge between the technical (engineering) and design (landscape architecture) teams. If we examine the Singapore Lower Secondary Geography syllabus as an example, we see that it addresses guiding questions related to water, water availability, human use, and sustainable management of water resources. This syllabus also includes guiding questions on rainforests and mangrove ecosystems (i.e. biodiversity in an NbS context), how can we build sustainable cities, the relationship between housing, environment, and people (i.e. community thermal comfort, well-being, and resilience in an NbS context), and informal (or in our case low-income) housing. Our real-world case study embodied all of these guiding questions.

The successful implementation of our project can be attributed to a strong multidisciplinary, interdisciplinary interaction that included a foundation of Geography principles, but most importantly embraced the community vision and its traditional knowledge. Although some parts of the world, sadly, are shifting away gender, equity, and inclusion (GEI) principles, our study discovered nuanced differences based on gender, multi-generation, and mobility lenses. These differences are important in developing a cohesive NbS community design.

Cooperators: Fa Likitswat, Jitiporn Wongwatcharapaiboon, Suntantana Nuanla-or, Patcharawee Sakulaset, Lihoun Teang, and Thammarat Koottatep

Time: Wed, 10 June 11:00-12:30 [Day 1] Session 1&2

Session 1: *Representing Sustainability in Geography Textbooks: Knowledge, Narratives and Power*

Session 2: *Reconfiguring Geography Education in the Digital Age: Agency, AI and Technologies*

Time: Wed, 10 June 11:00-12:30 [Day1]			
Session 1 (Phramingkwan 2&3 Room) *Representing Sustainability in Geography Textbooks: Knowledge, Narratives and Power*		Session 2 (Amphai Sucharitkun: Room 110) *Reconfiguring Geography Education in the Digital Age: Agency, AI and Technologies*	
Session chair: Tricia Seow		**Session chair: Martin Hanus**	
Paper	**Author(s)**	**Paper Titles**	**Author(s)**
Mind the gap between 'Awareness' and 'Advocacy': How do Chinese, English and Japanese geography textbooks address sustainability?	Hermione Xin Miao, Yushan Duan, Jiaqi Zhang	Advancing a Framework for Integrating Digital Humanities into Geography Education: A Comparative Review of DigitalTools	Lee Yi Ning, Zhi Ying Quek, Kenneth Y T Lim
A Comparative Analysis of Climate Change Education in Upper Secondary School Geography Textbooks in South Korea and Japan	JaYeon Yang	From Efficiency to Agency: Generative AI in Geography-Led Interdisciplinary Education for Sustainability	Ding Rong, Yang Xin, Liu Yimeng
Transforming Geographical Education for Sustainable Urban Futures: How Textbook Representations Shape Students' Understanding of Global Urban Housing Diversity	Cheak Su Peng, Tricia Seow	Teachers' conceptions of 3D printed models as representational tools in geography education	Oldřich Mokruša, Lenka Krajňáková, Martin Hanus
Didactic-Synergic Models for Sustainable Development in Geography Curriculums – Didactic Interpretations	Tamara Georgieva Draganova, represented by Stefka Stoykova	From Textbook to Reality: Rethinking Multicultural Urban Sustainability in Seoul in Geography Education through AI-Generated Discourse and Fieldwork	Phung Thi Hien
Geography in Compound Subjects: A Comparative Analysis Across English-, French-, and German-Language Scholarship	Péter Bagoly-Simó, Chantal Déry	Making Virtual Field Trips Inclusive in Geography Education: A Case Study of Sustainability in North East London	Sophie Wilson, VGeoSciEd Erasmus+ Project Partners

Time: Wed, 10 June 13:30-15:00 [Day 1] Panel Session

Navigating Complexity: Potential Benefits and Challenges of Science-policy Organizations for evidence-informed Policymaking in Education: A Case Study of Thailand

Sponsored by British Academy and University College London

Location: Duangduen Pisanbutr Room: Room 101

Moderator: Associate Professor Dr.Dhirapat Kulopas

Distinguished guest: Advisory group: Dr.Rangsun Wiboonuppatum

1) Representative from ONESQA: Professor Dr. Ong-art Naiyapatana, Director of ONESQA, Thailand
2) Representative from EEF: Associate Professor Dr. Patamawadee Pochanukul, Equitable Education Fund advisor, Thailand
3) International academic: Ms. Natalie Ohene, Senior Policy Manager, Education Endowment Foundation, UK
4) International academic: Mr. Nkululeko Tshabalala, Senior Programme Officer, Pan-African Collective for Evidence (PACE), South Africa
5) International academic: Associate Professor Janice Trripney, Evidence for Policy and Practice Information Centre (EPPI Centre), Social Science Research Unit, UCL, UK

Time: Wed, 10 June 15:30-17:00 [Day 1] Session 3&4

Session 3: *Repositioning Geography Education in Interdisciplinary Times: Knowledge, Boundaries and Futures*

Session 4: *Reimagining Geography Education for Sustainability in the Anthropocene: Knowledge, Pedagogy and Practice*

Time: Wed, 10 June 15:30-17:00 [Day 1]			
Session 3 (Phramingkwan 2&3 Room) *Repositioning Geography Education in Interdisciplinary Times: Knowledge, Boundaries and Futures*		Session 4 (Amphai Sucharitkun: Room 110) *Reimagining Geography Education for Sustainability in the Anthropocene: Knowledge, Pedagogy and Practice*	
Session chair: Hermione Xin Miao		**Session chair: Martin Hanus**	
Paper	**Author**	**Paper**	**Author**
Bridging Disciplines: Interdisciplinary Research in Geography Education	Tricia Seow	Fostering sustainability education through Geography: A critical review	Shu Jun Lee, Jeana Kriewaldt, Sally Windsor
In an era of sustainability imperatives, what is geography education for? Reflections on Interdisciplinary learning and classroom practice	Yushan Duan, Hermione Xin Miao	Beyond the Quick Fix: Integrating Pluralism and Interspecies Justice into Geography Education for the Anthropocene	Neo Mmonimang Moruthane
Assessing Students' Interdisciplinary Understanding of Socio-Scientific Issues in STEM Education through Concept Mapping	Anna Kellinghusen, Sandra Sprenger, Patrick Schuck, Anna Orschulik, Katrin Vorhölter, Sandra Schulz	Experience and education in the Anthropocene: conversations with the non-human	Tom Wils, Veronique Schutjens
Young people's geographies – a bridge between disciplinary- and experience-based knowledge?	Sirpa Tani, Yujing He	From Design to Evidence: Evaluating the Effects of MapStrApp on the Development of Students' Map Use Strategies	Martin Hanus, Lenka Krajňáková, Martin Kutiš, Dana Řezníčková, David Trokšiar, Veronika Bernhäuserová
Global and Australasian Priorities in Geography Education: Educator Perspectives on Monumental Challenges and Sustainability Futures	Gillian Kidman, Daniela Schemeinck		

Time: Thu, 11 June 09:00-10:30 [Day2] Keynote

Keynote: Fuangarun Preededilok (Chulalongkorn University, Thailand), *Bridging Worlds: Interweaving Development Education and Geography Education for Sustainability*

Venue: Sumon Amornvivat: Room 102/1, Faculty of Education

Keynote moderator: Martin Hanus

In the face of increasingly complex global and regional challenges, education plays a pivotal role in fostering sustainable futures. This keynote proposes an integrative framework that bridges Development Education and Geography Education.

Development Education offers critical perspectives on social justice, human development, and participatory learning, while Geography Education plays a vital role in cultivating global understanding and critical spatial awareness. Integrating these fields enables a more holistic approach to sustainability education — one that responds effectively to real-world challenges across environmental, social, and economic dimensions, as reflected in both regional issues and global risks.

This keynote draws on a dissertation in Development Education in Thailand structured across several cognate areas: sociology of education, economics of education, and the humanities in education. It further incorporates interdisciplinary research that connects educational theory with policy and area-based practices.

The integration of these fields is demonstrated through both research and teaching practices, including learner-centred pedagogies. This approach emphasizes systems thinking, community engagement, and interdisciplinary learning. It also highlights the role of education systems in advancing SDG 4.7 by equipping learners with the competencies necessary for sustainable development, global citizenship, and transformative action.

By “bridging worlds” across disciplines, knowledge systems, and practice, this keynote advocates for a transformative educational paradigm—one that empowers learners to navigate complexity and contribute meaningfully to sustainable development in both local and global contexts.

Time: Thu, 11 June 11:00-12:30 [Day 2] Session 5&6

Session 5: *Reconnecting Geography Education with Experience and Place: Emotion, Capability and Hope*

Session 6: *Educating for Climate and Sustainability Action: Teachers, Literacy and Interdisciplinary Pathways*

Time: Thu, 11 June 11:00-12:30 [Day 2]			
Session 5 (Sumon Amornvivat: Room 102/1) *Reconnecting Geography Education with Experience and Place: Emotion, Capability and Hope*		Session 6 (Amphai Sucharitkun: Room 110) *Educating for Climate and Sustainability Action: Teachers, Literacy and Interdisciplinary Pathways*	
Session Chair: Sirpa Tani		**Session Chair: Yushan Duan**	
Paper	**Author**	**Paper**	**Author**
Reframing environmental sensitivity through empathy-based photography in urban everyday environments	Markus Hilander, Elina Särkelä, Sirpa Tani	Perceptions and Approaches to Climate Change Education (CCE) in Social Studies Education: A Case Study of Secondary School Teachers in the Bangkok Metropolitan Region, Thailand	Jinnawat Lertpradit, Chutpong Pinpun
Is response certainty a reliable predictor of pupils' misconceptions in geography education? Preliminary findings	Tomáš Bendl, Lenka Krajňáková, Martin Hanus, David Hart, Miroslav Marada, Oldřich Mokruša	Climate Action Teachers 2.0: Reimagining Sustainability Education through Interdisciplinary, Digital, and Community-Engaged Innovation	Sally Wai-Yan Wan, Arthur Pak-Hei Lam, Harold Lam, Michael Shong Tung Leung, Fuangarun Preededilok, Suzannie Kit-Ying Leung, Ng Wing Hei (Rain)
Reconsidering Hometown Learning and Place-Based Learning in Japan: A Capability Approach to Children's Freedom	Mako Miyaji	Pre-service and in-service teachers' conceptions of (mis-)information and fake news in the context of climate change	Karen Wolckenhauer, Melissa Hanke, Sandra Sprenger
Beyond Doom and Gloom: Reframing Uncertainty in Climate Change Education for Future-Ready Learners	Roger C. Baars	Potential Mediation of The Central Catchment in Singapore on The Effects of the Monsoons	Sriyan Maddukuri, Achyut Aravindh, Kenneth Y T Lim
Children's experiences in their local environments in Ireland - 20 years on	Susan Jane Pike	Geography in the European Baccalaureate program: Teaching environmental action and sustainable environment	Mariëlle Prins

Time: Thu, 11 June 13:30-15:00 [Day 2] Session 7&8

Session 7: *From Learning to Participation: Rethinking the Role of Geography Education in Youth Participation and Sustainability*

Session 8: *Rethinking Geography Education: Knowledge, Relations and Critical Perspectives for Sustainability*

Time: Thu, 11 June 13:30-15.00 [Day 2]			
Session 7 (Sumon Amornvivat: Room 102/1) *From Learning to Participation: Rethinking the Role of Geography Education in Youth Participation and Sustainability*		Session 8 (Amphai Sucharitkun: Room 110) *Rethinking Geography Education: Knowledge, Relations and Critical Perspectives for Sustainability*	
Session Chair: Gillian Kidman		Session Chair: Nina Scholten	
Paper	**Author**	**Paper**	**Author**
Schools as Enablers of Youth Participation. Fostering Spatial Citizenship in Geography Education Through Data-Driven Project-Based Learning: Insights from the "Mobility Transition in Essen" Project	Lisa Wieczorek	Curriculum for Sustainability: Promoting sustainable development in Pre-service teacher training in higher education institutions	Thoko Poppy Mahlangu
Exploration of Implementation Strategies and Paths for Ecological Civilization Education	Fengtao Guo	Pathway selection and configuration optimization of pre-service teacher employment mobility	Siyao Li, Guo'an Tang
Geography Undergraduate Student Teachers' localising the Sustainable Development Goals in Water Pollution Projects: A Case study of two countries	Sadhana Manik, Vibeke Vagenes	Developing Geography Teaching Expertise: Enablers from Expert Teachers' Perspectives	Nina Scholten, Lisa Wieczorek
Borderland Pedagogy and Sustainability Education: Upper Silesia as a Contested Post-Industrial Case for Geographical Education	Geza Barta	Uncomfortable but Necessary: Bringing Gender into Geography Education for Sustainability	Kim Hyunjin

Time: Thu, 11 June 15:30-17:00 [Day 2] Session 9

Session 9: *Geographical thinking in development: student (mis-)conceptions and map-based reasoning*

Time: Thu, 11 June 15:30-17:00 [Day 2]	
Session 9 (Sumon Amornvivat: Room 102/1) *Geographical thinking in development: student (mis-)conceptions and map-based reasoning*	
Session Chair: Rafael de Miguel González	
Paper	**Author**
Experiential learning and geography teacher education: a case study for learning landscape in Spain	Rafael de Miguel González, Cristina Honrubia Montesinos & Gema Sánchez Emeterio
Developmental patterns in pupils' (mis)understanding of contour lines	Lenka Krajňáková, Martin Hanus, Tomáš Bendl, Miroslav Marada, Oldřich Mokruša
From Maps to Minds: Exploring Structural and Processual Differences in Students' Systems Thinking in a Geographical Concept Mapping Task	Natalie Bienert, Rainer Mehren, Jennifer Meister
Analyzing Differences in Students' Thematic Map Reading Skills Based on Learner Attributes: Implications for Geography Education	Ratih Puspita Dewi

Challenges in the Use of Maps in Japan's High school "Geography": Toward Geography Lessons that Enable Students to Envision the Future of Their Regions	Koji Ohnishi, Asahi Tanaka

Time: Fri, 12 June 09:00-10:30 [Day3] Parallel Workshops (with workshop introductions)

Workshop 1 (Exhibition Room: Room 104): *Co-Mapping the International Communities for Geography Education Scholars*

Hermione Xin Miao, IGU-CGE Emerging Scholars SIG

Academic conferences often reproduce hierarchical structures in which renowned scholars occupy central positions while early career researchers remain on the margins. In response, the IGU Commission on Geographical Education (IGU-CGE) has actively supported early career researchers through the initiatives of Early Career Researchers workshop and the development of Emerging Scholars Network. This interactive workshop aims to extend these efforts by inviting participants of the Bangkok conference to co-mapping communities of geography education research worldwide. The workshop begins with a brief introduction to the Emerging Scholars Special Interest Group (SIG), highlighting the importance of supportive communities for scholars to emerge. Participants will then take part in a zine-making activity, in which they visually represent their research interests, familiar places, and potential collaborations. These zines will be collectively assembled on a world map to create a visual representation of the global communities welcoming geography education scholars. To deepen the connections, the workshop will also include an academic 'speed-dating' activity, enabling participants to exchange research ideas and identify potential collaborations within Emerging Scholars SIG and beyond. In the final section, participants will engage in a "time-capsule" exercise. They will open short stories or clips of geography education scholars from different generations and regions. Reflecting on the past and present of the field, participants will be invited to imagine possible futures of geography education scholarship. Together, they will propose initiatives and collaborations to support sustainable scholarly development. The workshop will conclude with a collaborative working paper exploring an ecological perspective to scholarly development.

Note: This 90-minute interactive in-person workshop is organised by the IGU-CGE Emerging Scholars Special Interest Group (SIG).

Workshop 2 (Amphai Sucharitkun: Room 110): *Identifying trusted and emerging pedagogical practices in geography education - a Pedagogies and Didactics Special Interest Group (PAD-SIG) workshop*

Jeana Kriewaldt, Aubrey Golightly, Shu Jun Lee

Identifying trusted and emerging pedagogical practices in geography education Geography education is a distinctive discipline, yet its pedagogical theories and didactic principles require more robust theorisation and application. This paper reports on the work of the CGE's recently formed Pedagogies and Didactics Special Interest Group (PAD-SIG), established to convene geography education researchers in various learning contexts across continents to synthesise and critically evaluate trusted and emerging innovative practices.

Bringing together early-career and experienced geography educators from schools and universities, PAD-SIG aims to generate, interrogate, and synthesise research on geography's signature pedagogies and discipline-specific didactics, to identify gaps and future research directions. The development of innovative and effective geography teaching and learning practices cannot rest on assumptions or habits. Our literature synthesis lays the foundation for a structured, iterative professional dialogue to develop an evidence-informed map of geography pedagogy — one that honours enduring theoretical foundations and engages critically with emerging transformative teaching and learning approaches. Geography's disciplinary character is itself instructive here. A subject that holds physical and human perspectives in productive tension and moves across local and global scales, it demands pedagogical thinking of equivalent breadth and sophistication.

Key themes include place-based and inquiry-led learning, problem-based learning, the development of spatial and geospatial thinking, and the growing significance of sustainability dimensions and decolonising pedagogies. We emphasise comparative international perspectives, drawing on diverse cultural and research traditions, and do not seek to reduce this work to a single answer. PAD-SIG ultimately aims to foster pedagogical frameworks rigorous enough to inform curriculum design and teacher development, yet sufficiently open to accommodate the innovations that geography education will continue to generate. This early interactive session invites the geography education community to build these understandings.

Workshop 3 (Sumon Amornvivat: Room 102/1): *Picturing Resilience: Mapping Educator Perspectives on Climate Adaptation via Visual Q-Methodology*

Fa Likitswat

Target Participants

Geography educators, curriculum developers, and environmental researchers interested in innovative pedagogical tools for teaching complex climate concepts (Expected group of 20-30 experts).

Abstract

Climate resilience is a multifaceted concept that often eludes a single, static definition. For geography educators, navigating these diverse characteristics is critical to shaping how students understand environmental adaptation. This workshop proposes an interactive exploration of this complexity through Visual Q-Methodology, a research tool that bridges qualitative insights and quantitative analysis. Participants will engage in a "Q-sort" activity, evaluating visual representations of climate interventions through their professional lens. By collectively analysing these results, the session will uncover the shades of perspective that define current climate resilience education, providing attendees with both an alternative teaching methodology and a deeper understanding of the resilience discourse.

Objectives & Learning Outcomes

This session aims and creates these following expected outcomes: i) Applying Visual Q-Methodology as a transferable pedagogical tool for capturing subjective viewpoints on complex geographical topics, ii) Evaluating the trade-offs between different climate resilience strategies (e.g., hard infrastructure vs. nature-based solutions) using an educator-focused framework, iii) Analyzing collective data to identify patterns of consensus and divergence in how geographers prioritize resilience building blocks.

Methods & Activities

1) Introduction (15 min): Brief overview of the challenges in defining climate resilience and the mechanics of Visual Q-Method. 2) The Sorting Activity (45 min): Participants perform a forced-distribution sort using a grid format. This complex issue will be stated: "As a geography educator, which of these interventions represents the most critical 'building block' for a climate-resilient future?". The "pyramid" grid forces participants to make difficult prioritizations, moving beyond simple agreement to reveal each professional's values. Participants will share how their specific professional background influenced their ranking. 3) Collective Sharing & Discussion (30 min): A facilitated dialogue comparing between the group results will be discussed. We will specifically examine the +4 (Most Critical) and -4 (Least Critical) placements to understand the underlying pedagogical reasoning. The full comparative result of the factors and thematic analysis will be shared to the participants via email after the workshop session.

Posters

[Sumon Amornvivat: Room 102/1]

No.	Coffee Break Space at the Faculty of Education	Authors
1	Identifying Manifestations of Geographical Giftedness: Preliminary Findings from an Expert-Based Inquiry	Jakub Matula
2	How AI-Tools Can Cultivate High-Order Thinking in Geography Education: A Systematic Review	Tomáš Bendl, Miroslav Marada
3	Learning Activity Applying Cultural Studies Approach to Enhance Religious Literacy in Secondary Students	Patharawit Tunninkul, Natthaphat Lakul
4	Geographical Research Camp: Enhancing Research Skills, Cultural and Environmental Awareness: A Case Study of High School Students from Vajiravudh College	Kittipong Changthong, Patharawit Tunninkul, Khomkit Sopanat, Wassana Silaket, Piengruethai Nontanaruksa, Pattama Jujiea, Apipum Pliawpod, Poompat Wannachat, Natthaphat Lakul, Netkamon Hongchan, Nichira Chatikul, Nantiya Jaikengdee, Benjawan Bhutinan, Watsaphon Khamieam
5	From Global Dialogue to Local Action: A Community of Practice Model for Transformative SDG Education	Sally Wai-Yan Wan, Arthur Pak-Hei Lam, Harold Lam, Michael Shong Tung Leung, Fuangarun Preededilok, Suzannie Kit-Ying Leung, Ng Wing Hei (Rain)

Tips for the poster presenters:

The poster board size is A0 (77.5 inches *79inches), hence poster in A1 and A0 size would work both fine.

Poster Abstracts

Identifying Manifestations of Geographical Giftedness: Preliminary Findings from an Expert-Based Inquiry

Jakub Matula

The identification of geographical giftedness remains a complex challenge within geography education due to the multidimensional nature of the discipline and the current absence of a unified international conceptual framework. This study aims to bridge this theoretical gap by synthesizing expert perspectives within the psychometric framework of the Cattell-Horn-Carroll (CHC) theory of human cognitive abilities. By framing geographical giftedness through CHC broad abilities, this research seeks to distinguish authentic giftedness from high academic achievement.

The research design utilizes a three-round hybrid Delphi method involving an international panel of experts characterized by their dominant professional identities as either geographers or teacher educationists. This presentation focuses on preliminary findings derived from the first round of the study, completed in 2026, which employed qualitative inquiries to gather expert opinions on core competencies and behavioral indicators. Initial results highlight a consensus regarding the significance of complex spatial reasoning and the unique ability to synthesize physical and human geographical dimensions as primary indicators of giftedness. Furthermore, the data reveal a professional debate concerning the conceptual boundary between acquired "geographical literacy" and innate "authentic giftedness," suggesting that giftedness may be relational to a student's environment rather than a discrete internal phenomenon.

These interim findings provide a necessary foundation for the subsequent rounds of the Delphi process, which will move toward a statistical consensus on the validity of specific identification markers. The final outcome of the study will be a comprehensive conceptual framework designed to inform the development of pedagogical strategies for supporting geographically gifted students.

How AI-Tools Can Cultivate High-Order Thinking in Geography Education: A Systematic Review

Tomáš Bendl, Miroslav Marada

The use of artificial intelligence (AI) within geography education is an emerging field with growing relevance. This study aims to identify AI tools applied specifically in this field and to critically assess the nature of their educational use with special emphasis on the cognitive demands.

Through a systematic review (PRISMA statement methodology) of peer-reviewed articles published in geography education journals, we compiled a dataset of studies that incorporate AI into teaching and learning practices. A data-driven synthesis was conducted in the selected literature to uncover dominant patterns in how AI is being utilized. In addition, each identified application was examined in terms of its cognitive demand, classified according to Bloom's taxonomy and an enquiry-based learning framework.

This approach made it possible to evaluate whether current uses of AI in geography education promote only surface-level knowledge acquisition or foster high-order thinking skills. The outcomes offer a categorized overview of AI-supported educational practices, organized by their cognitive complexity. The findings contribute to a clearer understanding of how AI is currently integrated into geography education and provide a conceptual basis for guiding future implementations that support high-order thinking in geography education.

Learning Activity Applying Cultural Studies Approach to Enhance Religious Literacy in Secondary Students

Patharawit Tunninkul, Natthaphat Lakul

Amid increasing religious diversity and non-religiosity, the strand of religion, morality, and ethics in the Thai national curriculum requires revision. Furthermore, unfortunately, students in science-focused programs often have negative attitudes towards religious issues. Consequently, broadening curricular content to include diverse and contemporary religious issues, applying the cultural studies approach linked to learners' real-life experiences, is essential for strengthening religious literacy.

This research had three objectives: (1) To compare the pre-test and post-test of religious literacy of students learning with activities with the cultural studies approach, (2) To compare the post-test of the religious literacy with the expected standard score, and (3) To study the viewpoint about religions after learning with activities with the cultural studies approach. This research applied quantitative research methodology for the first and second objectives.

A qualitative research methodology was applied for the third objective. 20 upper-secondary students in one science-focused program class under the Office of the Private Education Commission (OPEC) were selected by a purposive method to be samples. The research instruments included (1) 20 50-minute lesson plans of learning activities with the cultural studies approach, (2) structured reflective questions, and (3) the religious literacy assessment test, which includes open-ended questions.

The data analysis relied on descriptive statistics, Dependent Sample t-tests, One Sample t-tests, and thematic analysis. The results revealed that the average post-test religious literacy score ($M = 2.575$, $S.D. = 0.422$) showed a statistically significant improvement compared to the pre-test score ($M = 1.013$, $S.D. = 0.516$) at the .05 level ($t = -13.2$; $p < .001$). Additionally, the average post-test religious literacy score was more than the expected standard score (2 out of 3) with statistical significance ($t = 6.09$; $p < .001$).

Moreover, analyzing students' viewpoint about religions from reflection activities, three themes can be classified: (1) For me - the theme of learning for practicing religious rituals properly, (2) For you - the theme of learning about religions to understand others, and (3) For us all - the theme of learning about religions for living harmoniously in multifaith world.

Geographical Research Camp: Enhancing Research Skills, Cultural and Environmental Awareness: A Case Study of High School Students from Vajiravudh College

Kittipong Changthong, Patharawit Tunninkul, Khomkit Sopanate, Wassana Silaket, Piengruethai Nontanaruksa, Pattama Jujiea, Apipum Pliawpod, Poompat Wannachat, Natthaphat Lakul, Netkamon Hongchan, Nichira Chatikul, Nantiya Jaikengdee, Benjawan Bhutinan, Watsaphon Khamieam

Research skills are essential for high school students because they strengthen academic performance, critical thinking, and lifelong learning capacity. This qualitative study primarily aims to investigate and develop students' research skills while simultaneously strengthening their awareness of local cultural heritage and the natural environment. This was achieved through an experiential learning process within a geographical research camp in Pran Buri—a significant area characterized by its unique ecological, geographical, and cultural diversity. The study focused on hands-on practice, involving a target group of 15 senior high school students from Vajiravudh College. The researchers employed qualitative methodology, utilizing tools such as behavioural observations of student participation in community interviews and interactions, content analysis of group research projects, and reflective journals and performance-based assessments derived from field data collection, including both interview-based data and information from relevant agencies.

The findings revealed the development in students' research skills through their comprehension of the research process. Specifically, students demonstrated enhanced skills in conducting literature reviews to ground their studies, followed by systematic data collection through interviews and community observation. Their abilities to perform both quantitative and qualitative analysis were notably improved, as they learned to categorize the data from field observations and community perspectives into coherent themes and present evidence-based research conclusions and discussions. Beyond technical skills, this experiential learning process fostered a profound awareness of the interdependent relationship between local cultural identity and the natural environment. By utilizing community settings as authentic learning environments, students did not merely observe but actively engaged with the Pran Buri landscape. This immersion cultivated a heightened appreciation for how traditional wisdom is intertwined with ecological preservation, recognizing that the survival of cultural heritage is inseparable from the health of the natural ecosystem. Ultimately, this geographical research camp served as a vital mechanism for cultivating active citizenship, empowering students with a holistic understanding essential for the sustainable advancement of both the cultural and natural landscapes within their regional context.

From Global Dialogue to Local Action: A Community of Practice Model for Transformative SDG Education

Sally Wai-Yan Wan, Arthur Pak-Hei Lam; Harold Lam; Michael Shong Tung Leung; Fuangarun Preededilok; Suzannie Kit-Ying Leung

Education for Sustainable Development (ESD) requires more than curriculum alignment with the Sustainable Development Goals (SDGs); it demands collaborative professional learning structures that enable teachers to translate global sustainability agendas into meaningful local action. This poster presents the conceptual design of "From Global Dialogue to Local Action," a cross-institutional initiative that connects prospective teachers, in-service secondary teachers, NGOs, museums, and international Education for Sustainable Development (ESD) scholars and experts in a sustained Community of Practice (CoP).

The project is structured around three interconnected pillars: (1) Global Dialogue sessions with international ESD experts and climate delegates to situate local practice within global sustainability discourses; (2) Transformative workshop series integrating digital storytelling, game-based learning, future thinking, and experiential fieldwork (e.g., marine and wetland education aligned with SDGs 6, 8, 12–15, and 17); and (3) iterative action learning cycles (Learn → Co-Design → Review → Refine) supported by the Context–Input–Process–Product (CIPP) evaluation model.

This poster highlights the project's theoretical foundations (communities of practice, teacher agency, collaborative professionalism), governance structure, and pedagogical architecture. The model foregrounds sustainability as an interdisciplinary, place-responsive endeavour, connecting ecological systems, socio-economic contexts, and global policy frameworks within classroom practice. The initiative demonstrates how structured global–local dialogue, distributed leadership, and sustained peer mentoring can support teachers in co-designing transformative SDG modules that integrate inquiry, systems thinking, and community engagement. It also outlines a sustainability strategy that embeds teacher leadership, open-access digital resources, and cross-sector partnerships to ensure continuity beyond the project period.

By visualizing this replicable framework, the poster contributes to international discussions on how sustainability education can move from isolated innovation to systemic professional transformation, equipping educators and learners to engage critically and creatively with complex global challenges.

Abstracts of Accepted Oral Presentations

Session 1 (Phramingkwan 2&3 Room, Wed, 10 June 11:00-12:30 [Day1])

Representing Sustainability in Geography Textbooks: Knowledge, Narratives and Power

Paper	**Author(s)**
Mind the gap between 'Awareness' and 'Advocacy': How do Chinese, English and Japanese geography textbooks address sustainability?	Hermione Xin Miao, Yushan Duan, Jiaqi Zhang
A Comparative Analysis of Climate Change Education in Upper Secondary School Geography Textbooks in South Korea and Japan	JaYeon Yang
Transforming Geographical Education for Sustainable Urban Futures: How Textbook Representations Shape Students' Understanding of Global Urban Housing Diversity	Cheak Su Peng, Tricia Seow
Didactic-Synergic Models for Sustainable Development in Geography Curriculums – Didactic Interpretations	Tamara Georgieva Draganova
Geography in Compound Subjects: A Comparative Analysis Across English-, French-, and German-Language Scholarship	Péter Bagoly-Simó, Chantal Déry

Mind the gap between ‘Awareness’ and ‘Advocacy’: How do Chinese, English and Japanese geography textbooks address sustainability?

Hermione Xin Miao, Yushan Duan, Jiaqi Zhang

This comparative study investigates how sustainability is positioned differently and integrated within lower secondary geography education in China, England, and Japan. The study employs qualitative content and discourse analysis to examine both thematic representation and epistemic framing of sustainability across three national geography curricula and textbooks released in 2024. It explores three modes through which sustainability, as an interdisciplinary global challenge, is connected to geography as a discipline-based school subject.

While all three systems recognise sustainability as an important educational concern, their framing and enactment differ significantly. The English textbook foregrounds geographical inquiry and embeds sustainability explicitly through question-led structures and global case studies. The Japanese textbook integrates the United Nations Sustainable Development Goals through policy-oriented and practice-based examples. In contrast, Chinese textbooks maintain a stronger emphasis on regional geography, where sustainability appears more implicitly within broader spatial and developmental contexts.

The findings suggest a spectrum ranging from sustainability awareness to advocacy, highlighting ongoing tension between disciplinary core competencies and interdisciplinary aspirations. These differences observed should not be interpreted hierarchically, but rather as shaped by distinct geopolitical, developmental, and spatial contexts. As a geographically vast and regionally diverse developing country, China's geography education carries fundamental responsibilities in fostering national spatial understanding and regional literacy. By contrast, England and Japan, as developed island nations with different territorial scales and development trajectories, may place stronger emphasis on sustainability as a weaving thread.

The study argues for re-imagining sustainability education as one important dimension of geography’s contribution to broader educational purpose. Grounded in disciplinary knowledge and thinking, school geography has unique potential to cultivate human capabilities for navigating critically with sustainability, spatial justice, and a shifting world order.

A Comparative Analysis of Climate Change Education in Upper Secondary School Geography Textbooks in South Korea and Japan

JaYeon Yang

This study aims to clarify the characteristics of climate change education within upper secondary school geography in South Korea and Japan through a comparative textbook analysis. South Korea and Japan incorporate climate change into their geography curricula. For instance, South Korea offers an elective subject, “Climate Change and the Sustainable World”, and Japan utilises the compulsory subject “Geography” and the elective subject “Advanced Geography”. This research analysed each subject's textbooks authorised by national systems in each country, comprising three Korean and six Japanese textbooks. The analysis identifies specific features in conceptual definitions and their explanations, connections with sustainability, and inquiry-based structures.

Firstly, regarding terminology, South Korea adopts “Gi-hu-byun-hwa” (Climate Change), and Japan employs “Ki-kou-hen-dou” (Climate Change/variations). Korean textbooks often cite the UNFCCC definition of climate change or present definitions mentioning both natural and anthropogenic factors at the beginning of each text. Japanese textbooks, meanwhile, explain the meaning of climate change alongside descriptions of global warming and greenhouse gases rather than providing a singular, distinct definition.

Secondly, Korean textbooks exhibit a progression from “Climate Change” to “Sustainability”, whilst Japanese texts present “Climate Change” as a component of Education for Sustainable Development (ESD) or as one of the global issues. This progression is reflected in curriculum designs with differing subject types and instructional hours: South Korea established a standalone elective subject for climate change, whereas Japan integrated the topic into a compulsory subject.

Thirdly, Korean textbooks provide diverse inquiry activities, specifically workbook style data analysis, alongside conceptual explanations. Meanwhile, Japanese textbooks offer extensive explanations, maps, and data as one of the selective practice references. Korean texts include project-based inquiries, such as proposing strategies for carbon neutrality from various industrial perspectives. All six Japanese textbooks initiate units with overarching geographical questions, such as “What are the impacts of global warming?”, and offer them as optional resources for teachers to facilitate classroom practice.

These findings suggest that geography textbooks focusing on climate change in both countries reflect each country’s academic approaches and pedagogical characteristics—whether practice-based or textbook-based—in defining climate change, integrating global issues, and determining the textbook's role in inquiry-based learning.

Transforming Geographical Education for Sustainable Urban Futures: How Textbook Representations Shape Students' Understanding of Global Urban Housing Diversity

Cheak Su Peng, Tricia Seow

In an era of rapid urbanisation and global interconnectedness, geography education plays a crucial role in preparing students to understand and engage with sustainable urban development challenges. This research examines how Singapore's lower secondary geography textbooks influence students' geographical imaginations about urban housing environments, with implications for developing more sustainable and equitable approaches to geography education.

Through photo-elicitation interviews with six secondary students who completed Singapore's Housing topic, this study reveals both the positive contributions and critical limitations of textbook-centred geography education. While textbooks successfully develop foundational geographical knowledge and foster national identity, they inadvertently create stereotypes and misconceptions about urban housing in different global contexts, reinforcing binary thinking about "developed" versus "developing" urban environments.

The findings highlight the transformative potential of teacher agency in providing alternative narratives that challenge textbook limitations and support students in developing more nuanced, ethical, and contextually responsive geographical imaginations. Teachers who actively supplemented textbook content with diverse perspectives enabled students to understand urban complexity beyond simplistic developmental typologies, fostering critical thinking essential for addressing contemporary sustainability challenges.

This research demonstrates the urgent need for geography curricula to move beyond binary representations of urban development towards more inclusive approaches that recognise the diversity of urban experiences globally. The study offers practical recommendations for curriculum development, textbook design, and teacher professional development that can better prepare students for global citizenship in an increasingly complex urban world, supporting both educational transformation and sustainable urban futures.

Didactic-Synergic Models for Sustainable Development in Geography Curriculums – Didactic Interpretations

Tamara Georgieva Draganova

The report examines the program contexts for sustainable development in geography as a function of forming and developing students' ecological culture. The study is based on the regulatory framework according to the state educational standards, geography curricula and content models for sustainable development.
Comparative parallels between the individual educational levels and stages are sought, highlighting the specifics and algorithmic features, content accents and competencies as expected results of student training in knowledge, skills and competencies.

Comparative models for the development of educational policies towards sustainability in selected countries are presented according to criteria – strategic vision, curricula, program elements with integration towards sustainability, teacher competences for sustainability, availability of support to schools for teaching towards a sustainable future and environmental education, etc. The report examines educational strategies and program components across curricula in 15 countries in Europe in the context of geographic education, sustainable development, resilience, and a green future.

The didactic-synergistic models of sustainable development in geography teaching for classes, educational stages and levels are presented. The didactic interpretations made are in response to the expected learning outcomes at different program levels, and the expected outcomes are deduced and justified with arguments.

Comparative geographical education in the 21st century presents a meaningful position towards new criteria and indicators for comparison, for which numerous statistical data and normative documents are available, which allow for the conduct of research and the presentation of analyses, exemplary models and effective practices in school education.

One of the conclusions of the study is the need for actions for the continuing education and additional qualification of teachers in relation to training in sustainability, sustainable development and the green transition for all educational stages and grades. The conclusion is also relevant to the training of pedagogical specialists at the higher education level, which requires updating and adapting the curricula and curricula in higher education institutions. In the future, it is imperative to develop standards for teachers and their competencies specifically for sustainability, green skills, sustainable development, and a sustainable future.

The following research methods were applied: content analysis, situational analysis, comparative analysis, generalization, systematization, etc.

Geography in Compound Subjects: A Comparative Analysis Across English-, French-, and German-Language Scholarship

Péter Bagoly-Simó, Chantal Déry

Across diverse educational systems, geography is increasingly being integrated into composite or "compound" subjects, most commonly within the social sciences and, in some instances, in conjunction with the natural sciences. While such curricular configurations have long-standing precedents in countries, such as New Zealand, the United States, and Canada, they represent a comparatively recent development in many European countries. These reforms typically merge geography with history and related disciplines under broader frameworks (e.g., social science or social studies), thereby challenging the traditional monodisciplinary organization of subject knowledge. From a disciplinary standpoint, both geography and history articulate robust epistemological and methodological rationales for maintaining distinct subject identities.

Despite normative arguments advanced by disciplinary communities, the empirical evidence regarding the pedagogical, epistemic, and institutional consequences of subject integration remains limited. The (dis)advantages of compound subjects—whether in terms of knowledge coherence, teacher expertise, or students' conceptual understanding—are insufficiently theorized and unevenly documented. Moreover, there is a notable lack of systematic research into the reform processes themselves: who initiates and shapes these curricular transformations, which stakeholders are involved, and how power dynamics unfold among ministries, curriculum developers, teacher associations, and academic experts. Equally underexplored are the repercussions of integration for the status and substance of geographical knowledge in classrooms.

This paper addresses these gaps through a comparative meta-analysis of scholarship published in English, French, and German. It maps the temporal trajectories of integration reforms (when), the national and regional contexts in which they occur (where), and the institutional actors and policy rationales driving them (who and why). Conceptually, the analysis is structured around the tension between general education and subject-specific education, examining how these orientations frame the justification and design of compound subjects. Particular attention is given to the extent to which existing research engages with actual classroom practices and learning processes, rather than remaining at the level of policy discourse. By triangulating these literatures, the paper contributes a structured overview of the state of knowledge and identifies critical avenues for future research on the disciplinary futures of geography.

Session 2 (Amphai Sucharitkun: Room 110, Wed, 10 June 11:00-12:30 [Day1])

Reconfiguring Geography Education in the Digital Age: Agency, AI and Technologies

Paper Titles	**Author(s)**
Advancing a Framework for Integrating Digital Humanities into Geography Education: A Comparative Review of DigitalTools	Megan Lee Yi Ning, Zhi Ying Quek, Kenneth Y T Lim
From Efficiency to Agency: Generative AI in Geography-Led Interdisciplinary Education for Sustainability	Ding Rong, Yang Xin, Liu Yimeng
Teachers' conceptions of 3D printed models as representational tools in geography education	Oldřich Mokruša, Lenka Krajňáková, Martin Hanus
From Textbook to Reality: Rethinking Multicultural Urban Sustainability in Seoul in Geography Education through AI-Generated Discourse and Fieldwork	Phung Thi Hien
Making Virtual Field Trips Inclusive in Geography Education: A Case Study of Sustainability in North East London	Sophie Wilson, VGeoSciEd Erasmus+ Project Partners

Advancing a Framework for Integrating Digital Humanities into Geography Education: A Comparative Review of Digital Tools

Megan Lee Yi Ning, Zhi Ying Quek, Kenneth Y T Lim

In an era defined by environmental change and rapid digital transformation, an innovative geographical curriculum is essential for advancing geographical inquiry. With digital technology playing an important role in shaping our future, integrating geographical digital tools during secondary education will equip students with the skills needed to analyse geographical information more effectively and efficiently.

This research paper proposes a novel framework for integrating Digital Humanities into Geography Education, moving past the predominant reliance on Geographic Information Systems (GIS) as a standalone analytical tool. While GIS remains foundational for spatial analysis, by combining it with text mining and network analysis, this framework enables students to examine geographical phenomena across spatial and temporal dimensions.

We started by expanding the methodological repertoire of geography education, embedding interdisciplinary digital tools: GIS for spatial patterning, text mining for extracting themes from policy documents, and network analysis for mapping relationships among stakeholders. We aimed to align geography curricula with the United Nations Sustainable Development Goals, particularly goal 4 (Quality Education), target 4.7, by strengthening environmental literacy and global citizenship. In the end, we developed a structured evaluative framework that guides educators in selecting appropriate tools for different pedagogical contexts.

Methodologically, the study undertook a comparative review of widely accessible digital platforms and classroom applications. Tools were assessed through a multi-dimensional criteria matrix encompassing factors such as accessibility, pedagogical flexibility and feasibility designed to balance analytical depth with practical implementation in schools.

Our results included a scalable curriculum framework that broadens analytical competencies beyond spatial mapping, fostering integrative thinking about environmental systems and sustainable development challenges. By situating digital skill-building within the broader agenda of environmental education and ecological citizenship, this framework contributes to a more holistic and future-ready model of geographical learning.

From Efficiency to Agency: Generative AI in Geography-Led Interdisciplinary Education for Sustainability

Ding Rong, Yang Xin, Liu Yimeng

This study explores how generative artificial intelligence (GenAI) reconfigures teacher agency in geography-led interdisciplinary Education for Sustainable Development (ESD). As interdisciplinary thematic learning becomes institutionalized, geography teachers are increasingly expected to address complex socio-ecological issues beyond traditional disciplinary boundaries. Yet engaging with sustainability often requires navigating unfamiliar knowledge domains, creating tensions between interdisciplinary integration and disciplinary coherence.

Grounded in an ecological conception of teacher agency, this study conceptualizes agency as relational and contextually achieved within structural, cultural, and material conditions rather than as individual autonomy. Extending this perspective, GenAI is theorized as a sociomaterial mediator that reshapes the practical-evaluative and projective dimensions of agency in curriculum making. Using a design-based research approach, we developed InnoHub, an AI-supported co-design platform for interdisciplinary curriculum development. Formative study revealed that teachers' concerns centered less on efficiency and more on safeguarding geography's epistemic distinctiveness, aligning sustainability competencies with curriculum standards, and maintaining professional authority amid automation.

In response, InnoHub was designed as a dialogic partner rather than a content generator: geography standards and key concepts are embedded to sustain disciplinary framing, while AI-generated prompts require active interpretation, evaluation, and contextual adaptation by teachers. The analysis of pilot case study (migratory bird conservation project) suggests three interrelated dimensions of agency reconfiguration: epistemic framing authority (geography disciplinary sovereignty), reflexive professional judgment, and expanded projective capacity. Rather than displacing expertise, GenAI appears to mediate conditions under which professional action is exercised. In this sense, AI-supported co-design points toward a form of co-agency in which human judgment remains central while technologically mediated resources expand the horizon of interdisciplinary sustainability education.

Teachers' conceptions of 3D printed models as representational tools in geography education

Oldřich Mokruša, Lenka Krajňáková, Martin Hanus

Over the past decade, 3D printing has expanded beyond its original industrial context and has gradually entered school environments as an emerging educational technology. In geography education, however, its role remains conceptually underexplored. While research has demonstrated the potential of 3D printed terrain models for supporting topographic map interpretation, less attention has been paid to how geography teachers themselves conceptualise the pedagogical value of 3D printed models across a broader range of geographic concepts.

This study presents findings from a questionnaire survey of lower- and upper-secondary geography teachers examining the perceived benefits, barriers, and concept-specific affordances of 3D printed models in geography teaching. Rather than approaching 3D printing primarily as a technological innovation or a maker-oriented activity, the study focuses on its instructional use within geography lessons and on how teachers perceive its contribution to subject-specific learning. In particular, it explores which geographic concepts teachers consider especially suitable for model-based instruction and under what institutional and professional conditions such integration is seen as meaningful and sustainable.

The findings suggest that teachers strongly associate 3D printed models with supporting conceptual understanding of spatial relationships and 2D–3D representational transitions, while simultaneously identifying substantial time- and competence-related constraints. Beyond topography, respondents indicate a wider spectrum of physical and human-geographical topics that may benefit from tangible modelling.

The presentation will outline a framework of geography-specific concepts perceived as suitable for 3D model integration and discuss implications for sustainable innovation in geography education. Selected examples of possible model representations will be used to illustrate how teachers' perspectives offer valuable insight into how 3D printed models can be meaningfully integrated into geography teaching and what practical and professional challenges accompany their classroom use.

Keywords: 3D printing; 3D printed models; teacher perception; technology adoption; spatial thinking

From Textbook to Reality: Rethinking Multicultural Urban Sustainability in Seoul in Geography Education through AI-Generated Discourse and Fieldwork

Phung Thi Hien

This study investigates the representation of multicultural urban sustainability in Seoul within geography education and evaluates the alignment between pedagogical narratives and lived socio-spatial realities. Focusing on three ethnic enclaves—Mongol Town, the Korean-Chinese enclave (Daerim-dong), and Islamic Street (Itaewon-dong)—the research triangulates official high school geography textbooks, AI-generated discourse (ChatGPT), and empirical fieldwork. The aim is to rethink current educational content and propose a nuanced, place-based framework for sustainability teaching in multicultural urban contexts.

A comparative qualitative design is employed, grounded in Lefebvre's Triad of Space and Foucault's Discourse Theory. First, Qualitative Content Analysis and Critical Discourse Analysis (CDA) are conducted on South Korean textbooks to deconstruct how multiculturalism and urban sustainability are framed through institutional narratives. Second, a Prompt-based AI Analysis evaluates patterns of algorithmic bias and digital stereotyping in AI-generated knowledge. Third, Systematic Fieldwork — utilizing participant observation and spatial mapping — documents everyday spatial practices, cultural visibility, and socio-economic conditions across the three sites.

Findings and Conclusion: Significant discursive and spatial discrepancies emerge. Textbooks provide reductive, policy-oriented narratives simplifying social integration; AI reproduces decontextualized representations; whereas fieldwork uncovers complex realities marked by spatial conflicts and socio-economic marginalization. Moving beyond traditional curriculum audits, this study uniquely integrates AI-generated discourse as a new layer of geographical knowledge. The results confirm that existing geography education only partially aligns with lived socio-spatial realities. The study emphasizes the need for a pedagogical framework integrating critical AI literacy in geography education with place-based field learning to foster a more critical, context-sensitive geographical understanding of multicultural urbanism.

Keywords: Multicultural Urban Sustainability, Geography Education, AI-Generated Discourse, Fieldwork, Seoul.

Making Virtual Field Trips Inclusive in Geography Education: A Case Study of Sustainability in North East London

Sophie Wilson, VGeoSciEd Erasmus+ Project Partners

Virtual field trips (VFTs) offer geography students opportunities to explore local areas digitally, expanding access to fieldwork beyond traditional boundaries. However, to be genuinely inclusive and sustainability-focused, these experiences must reflect diverse communities while integrating geographical and interdisciplinary knowledge on environmental, social, and cultural dimensions. This presentation shares initial findings from a case study developed by trainee teachers following a field visit to North-East London, focused on the theme 'Greening Our City' and exploring sustainability, urban living, and colonial legacies within the area. Drawing on insights from the VGeoSciEd project, the session examines the challenges and opportunities of embedding inclusive approaches within sustainability education through innovative digital practices.

It will showcase recent VGeoSciEd outputs — including a glossary, guidelines, and instructional videos — and demonstrate their application through a practical case study of a virtual field trip created by geography trainees. The project's approach aligns with the Universal Design for Learning (UDL) Guidelines (CAST, 2024) and the GreenComp sustainability framework (European Commission, 2022), adapting resources to incorporate multiple perspectives, flexible access, and culturally responsive narratives.

The strategies presented illustrate how VGeoSciEd guidelines can transform traditional field trips into accessible, equity-focused digital experiences that foster critical engagement with local environments—supporting innovative geographical education for just, resilient futures. Delegates will gain practical tools for implementing similar approaches transferable across a variety of place-based primary, secondary, and teacher educator contexts.

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Session 3 (Phramingkwan 2&3 Room, Wed, 10 June 15:30-17:00 [Day 1]) *Repositioning Geography Education in Interdisciplinary Times: Knowledge, Boundaries and Futures*	
Paper	**Author**
Bridging Disciplines: Interdisciplinary Research in Geography Education	Tricia Seow
In an era of sustainability imperatives, what is geography education for? Reflections on Interdisciplinary learning and classroom practice	Yushan Duan, Hermione Xin Miao
Assessing Students' Interdisciplinary Understanding of Socio-Scientific Issues in STEM Education through Concept Mapping	Anna Kellinghusen, Sandra Sprenger, Patrick Schuck, Anna Orschulik, Katrin Vorhölter, Sandra Schulz
Young people's geographies – a bridge between disciplinary- and experience-based knowledge?	Sirpa Tani, Yujing He
Global and Australasian Priorities in Geography Education: Educator Perspectives on Monumental Challenges and Sustainability Futures	Gillian Kidman, Daniela Schemeinck

Bridging Disciplines: Interdisciplinary Research in Geography Education

Tricia Seow

Geography is widely recognized as a synthesizing discipline that bridges the sciences and humanities. This paper examines how and why geography education research can benefit from interdisciplinary collaboration, particularly amidst trends towards constructivism and inquiry-based learning. Using two case studies from the Singapore context, it illustrates how partnerships with science and literacy education researchers strengthened geography's research impact and pedagogies. The paper highlights enabling conditions for successful interdisciplinary endeavours like shared epistemic and conceptual frameworks, as well as the value of geography's conceptual lenses and methodologies to interdisciplinary teams.

In an era of sustainability imperatives, what is geography education for? Reflections on Interdisciplinary learning and classroom practice

Yushan Duan, Hermione Xin Miao

This paper examines the relationship between geography as a disciplinary field and its evolving role in interdisciplinary learning within the context of education for sustainability. As global challenges increasingly demand integrated knowledge and action, geography is often positioned as a "bridging subject" across the natural sciences, environmental studies, economics and engineering. Yet, this positioning raises questions: what is geography education for within such agendas? Is it primarily a supporting subject for sustainability initiatives, or does it retain distinctive purposes and forms of knowledge and thinking that shape how sustainability itself is understood?

Drawing on national curriculum development, international comparative research, and classroom practice, this paper provides a conceptual reflection on the educational potential of geography in interdisciplinary contexts. It examines three influential traditions of interdisciplinary pedagogy: inquiry-based learning, problem-based learning, and project-based learning. The analysis explores how each approach conceptualises knowledge integration, student engagement, and the relationship between disciplinary understanding and real-world issues that transcend subject boundaries.

The paper argues that meaningful education for sustainability requires not the 'dilution' of disciplinary geography, but its thoughtful articulation within interdisciplinary contexts. Core geographical concepts (e.g., systematic thinking and human–environment relations) and academic geographical research lay intellectual foundations for navigating sustainability challenges. By clarifying the conceptual underpinnings of interdisciplinary traditions, the study advances ongoing international dialogue on how geographical and interdisciplinary knowledge, practice and innovation can be integrated while sustaining disciplinary depth and broader educational purpose.

Assessing Students' Interdisciplinary Understanding of Socio-Scientific Issues in STEM Education through Concept Mapping

Anna Kellinghusen, Sandra Sprenger, Patrick Schuck, Anna Orschulik, Katrin Vorhölter, Sandra Schulz

Climate change is a complex challenge that cannot be addressed or mitigated solely through subject-specific knowledge; rather, it requires an interdisciplinary approach as well as social and ethical reflection. To enable secondary school students to make informed decisions in the future, fostering interdisciplinary knowledge is essential (Zeidler & Newton, 2017). This study investigates the extent to which students (n = 44) can connect concepts from different subjects, including Geography, Computer Science, Mathematics, and Physics, within the context of socio-scientific issues (SSIs).

Using climate change as an example, interdisciplinary STEM learning environments were developed that address realistic measures for reducing greenhouse gas emissions in the areas of mobility and transportation as well as sustainable consumption (Kellinghusen et al., 2025). Students' interdisciplinary knowledge was assessed at the end of the teaching environments using semi-structured concept maps to make their holistic understanding of climate change visible.

The analysis followed a mixed-methods approach: quantitatively, the number of connections within and between concepts was recorded (Reiska et al., 2018). Qualitatively, different forms of interdisciplinary connections were identified and categorized. The results show that students establish connections both within and between teaching environments. Moreover, they link content, methods, and models when representing the issue of climate change. The study demonstrates that students can interconnect concepts from an interdisciplinary STEM unit and use different forms of integration to address complex societal challenges such as climate change.

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Young people's geographies – a bridge between disciplinary- and experience-based knowledge?

Sirpa Tani, Yujing He

Theoretical background for this presentation is based on the academic discussion surrounding 'powerful knowledge' and its contribution to subject-specific education. Powerful knowledge has been defined as specialized, systematic, and often specific to a particular discipline (Young & Muller, 2016). Disregarding the role of everyday knowledge (e.g., Roberts, 2014) in these definitions has been criticized. The aim of this presentation is to discuss the potential that students' experience-based knowledge, when connected to the geographies of young people, can offer for geography teaching. In doing so, the presentation seeks to build bridges between discipline-based teaching and young people's daily lives. Everyday knowledge will be connected with the ideas of powerful disciplinary knowledge.

The presentation describes empirical research conducted with ninth-grade students and their geography teacher in a lower secondary school in Helsinki during the spring semester of 2026. The process is focused on students' understanding of globalisation and their views on possible futures related to their own lives, their neighbourhood, Finland and the world. Materials gathered include students' personal writings, photographs and drawings, posters made in small groups, followed by photo-elicited group discussions.

The presentation will emphasize the need to incorporate students' experience-based knowledge into geography classrooms. Everyday knowledge will be explored from the perspective of young people's geographies – a sub-field of academic human geography that has been rapidly developed in the 21st century. It will be argued that bringing young people's geographies into classrooms will strengthen students' interest in geography education and help teachers construct links between academic geography and geography taught in schools.

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Global and Australasian Priorities in Geography Education: Educator Perspectives on Monumental Challenges and Sustainability Futures

Gillian Kidman, Daniela Schemeinck

This presentation draws upon the findings of an international study which investigates the intersection of contemporary global issues and international geography education. We surveyed 853 geography educators, teachers, PhD scholars and preservice teachers to examine how contemporary “monumental challenges” are prioritised by geography educators. Participants identified their three most significant societal challenges in their local and global settings. Global synthesis data indicated strong consensus around Climate Change and Environmental Resilience as the defining educational priority.

This presentation considers the global rankings in comparison to the Australasian rankings In the Australasian rankings, Climate Change and Environmental Resilience was followed by Water Scarcity and Hydrological Risks, and Biodiversity Loss. These emphases reflect regional realities: bushfires, coral reef degradation, monsoonal variability, river basin tensions, Pacific Island vulnerability, and biodiversity hotspots. Overall, educators would prioritise environmental risk, resource security, and regional vulnerability as defining geographical concerns. Geography education is uniquely positioned to connect environmental processes, social justice, and civic engagement, thereby advancing coherent and contextually responsive sustainability education.

Session 4 (Amphai Sucharitkun: Room 110, Wed, 10 June 15:30-17:00 [Day 1])

Reimagining Geography Education for Sustainability in the Anthropocene: Knowledge, Pedagogy and Practice

Paper	**Author**
Fostering sustainability education through Geography: A critical review	Shu Jun Lee, Jeana Kriewaldt, Sally Windsor
Beyond the Quick Fix: Integrating Pluralism and Interspecies Justice into Geography Education for the Anthropocene	Neo Mmonimang Moruthane
Experience and education in the Anthropocene: conversations with the non-human	Tom Wils, Veronique Schutjens
From Design to Evidence: Evaluating the Effects of MapStrApp on the Development of Students' Map Use Strategies	Martin Hanus, Lenka Krajňáková, Martin Kutiš, Dana Řezníčková, David Trokšiar, Veronika Bernhäuserová

Fostering sustainability education through Geography: A critical review

Shu Jun Lee, Jeana Kriewaldt, Sally Windsor

Scholars have long argued that geography as a discipline is a natural fit for the teaching of sustainability. However, critics have countered that geography's potential for advancing sustainability education particularly at the school level i.e. primary, middle and high school, has largely been unrealized. We conducted a scoping review to investigate research evidence on the intersections between school geography and sustainability education.

Our key research question was "What is the significance of school geography for sustainability education?" We defined our search criteria and eventually selected 62 publications from 1973 to 2023 for review. We identified nine broad themes in this body of research. Geography uniquely promotes human-environment thinking, which is essential for considering sustainable futures. Geography education is also inherently concerned about the future and how young people imagine sustainable futures and bring about transformative change. Transformative pedagogies used within geographical inquiry, such as debates, role plays, and fieldwork, support students' critical thinking and reflection, value clarification and analysis, and action-oriented thinking. Geography, with its embedded use of spatial technologies and measurements within observations, enables and makes visible the explicit linking of human and natural systems.

Significantly however, we found that other aspects of sustainability education in geography have received less attention. Critical geography is, at best, only gently making its way into schools. There is consideration of social justice in geography education, yet few accounts from the perspective of those who are oppressed exist. The belief that the solution can be achieved by incremental individual actions when education fails to ask students to critically assess the impacts of consumerism and capitalism on those who live in poverty is being challenged.

Beyond the Quick Fix: Integrating Pluralism and Interspecies Justice into Geography Education for the Anthropocene

Neo Mmonimang Moruthane

Drawing on my teaching experience in both the Northern and Southern Hemispheres, this study examines the systemic exclusion of critical perspectives in geography education. Specifically, it addresses the prioritization of certain geographic topics at the expense of others and the maintenance of hierarchies that assign greater significance to particular species.

In the context of the Anthropocene, a geological epoch characterized by human activity as the primary force reshaping Earth's systems, I contend that geography education must transcend superficial environmentalism. Traditional curricula frequently reinforce anthropocentrism, thereby exerting unsustainable pressure on natural systems and increasing the risk of ecological collapse.

This presentation illustrates how integrating Critical Animal Pedagogies (CAP) and pluralistic teaching practices can transform Education for Sustainable Development (ESD). By rejecting eco-certified indoctrination and instead offering a systemic critique of ranking systems that marginalize both specific human groups and non-human species, I demonstrate how educators can promote a more authentic and transformative approach to geography education. Key indicators of this transformation include a shift from value-neutral instruction to ethical literacy, the replacement of prescriptive curricula with student-led critical inquiry, and the adoption of a circular, relational model of environmental stewardship that connects environmental management with social justice.

Experience and education in the Anthropocene: conversations with the non-human

Tom Wils, Veronique Schutjens

In the Anthropocene we are inescapably embedded in the planetary, such that we cannot experience the scales of our impact nor keep analytical or critical distance to it. This new position requires a new pedagogy for geography education in the Anthropocene, able to relate to the fragmentary experiences on a wounded planet. It also requires recontextualization of cutting-edge powerful geographical knowledge. In this contribution we conceptualise the consequences of this new position for teaching geography and explore the importance of transformative approaches. We do so through humanistic and posthuman perspectives. We argue for developing a compassionate distance through ecological dialogue with the non-human. Examples of dialogical border crossing that explore relation, positionality and meaning with students in the Anthropocene classroom are discussed.

From Design to Evidence: Evaluating the Effects of MapStrApp on the Development of Students' Map Use Strategies

Martin Hanus, Lenka Krajňáková, Martin Kutiš, Dana Řezníčková, David Trokšiar, Veronika Bernhäuserová

In recent years, geography education research has increasingly emphasized the importance of developing students' higher-order cognitive skills and strategic competence in working with visual representations. Previous presentations of the MapStrApp project introduced its theoretical foundations, methodological framework, and the design of an adaptive digital tool aimed at fostering students' map use strategies.

The current study moves beyond conceptual development and focuses on empirical evidence from classroom implementation. MapStrApp is a research-informed online application designed to systematically develop students' cognitive strategies for map use through structured tasks, scaffolding mechanisms, and adaptive feedback. The application is grounded in a categorization of map tasks based on underlying cognitive operations and ideal solving strategies. Its design aims not only to expand students' repertoire of strategies but also to enhance their adaptive use across different task types.

This paper presents findings from the first phase of testing in practice. Using the data, the study examines changes in students' (a) repertoire of map use strategies, (b) strategy adaptability in relation to task type, and (c) selected indicators of cognitive performance in map-based problem solving. The results provide initial evidence of the app's impact on the development of strategic competence in problem solving. The findings contribute to the discussion on how adaptive digital tools can meaningfully support cognitive development in geography education and offer implications for the integration of strategy-focused interventions into classroom practice.

Session 5 (Sumon Amornvivat: Room 102/1, Time: Thu, 11 June 11:00-12:30 [Day 2]) *Reconnecting Geography Education with Experience and Place: Emotion, Capability and Hope*	
Paper	**Author**
Reframing environmental sensitivity through empathy-based photography in urban everyday environments	Markus Hilander, Elina Särkelä, Sirpa Tani
Is response certainty a reliable predictor of pupils' misconceptions in geography education? Preliminary findings	Tomáš Bendl, Lenka Krajňáková, Martin Hanus, David Hart, Miroslav Marada, Oldřich Mokruša
Reconsidering Hometown Learning and Place-Based Learning in Japan: A Capability Approach to Children's Freedom	Mako Miyaji
Beyond Doom and Gloom: Reframing Uncertainty in Climate Change Education for Future-Ready Learners	Roger C. Baars
Children's experiences in their local environments in Ireland - 20 years on	Susan Jane Pike

Reframing environmental sensitivity through empathy-based photography in urban everyday environments

Markus Hilander, Elina Särkelä, Sirpa Tani

This presentation examines how environmental sensitivity—traditionally associated with natural settings—can be meaningfully extended to urban built environments by engaging pre-service teachers in empathy-based photography. The study addresses the challenge that future primary teachers often struggle to adopt children's experiential viewpoints, despite the centrality of empathy and perspective-taking in geography and environmental education. Building on the concept of environmental sensitivity and the method of empathy-based stories, the presentation focuses on the application of an empathy-based photography task designed to immerse participants in children's everyday geographies.

The research draws on a 4-fold dataset consisting of 258 photographs and reflective essays produced by 75 Finnish pre-service teachers, alongside 81 photographs and photo-elicitation interviews with three preschool children. The photography instruction required pre-service teachers to investigate one urban location from both a child's perspective and another self-selected viewpoint. Reflexive thematic analysis was employed to explore patterns across the visual and textual materials.

The anticipated outcomes highlight both the potential and limitations of empathy-based photography. The juxtaposition of children's and pre-service teachers' photographs illustrates how children attend to environmental details, playfulness, and imaginative meanings, whereas pre-service teachers frequently emphasize safety, functionality, and broader spatial structures. Although photography encouraged some students to physically lower their viewpoint and creatively reimagine urban spaces, many found it challenging to genuinely inhabit a child's perspective. In several cases, only the written reflections—not the photographs themselves—revealed attempts at perspective-taking.

The presentation concludes that empathy-based photography can serve as a valuable pedagogical tool for broadening understandings of environmental sensitivity in teacher education, but also requires explicit scaffolding to support perspective-taking. Implications for geography education include designing learning activities that help future teachers recognize children's embodied, imaginative, and detail-oriented engagements with urban environments, thereby fostering more inclusive and child-responsive educational practices.

Is response certainty a reliable predictor of pupils' misconceptions in geography education? Preliminary findings

Tomáš Bendl, Lenka Krajňáková, Martin Hanus, David Hart, Miroslav Marada, Oldřich Mokruša

For the identification of misconceptions, two- to six-tier tests are currently the commonly used methods across disciplines. These tests are based on the hypothesis proposed by Hasan et al. (1999) that individuals' certainty in test answers, measured by the Certainty of Response Index (CRI), makes it possible to distinguish between incomplete conceptual understanding and misconceptions. Specifically, the hypothesis assumes that individuals who answer incorrectly with high confidence hold a misconception. However, this long-used assumption has recently been questioned by Hull et al. (2022), who argue that drawing conclusions about pupils' misconceptions based solely on answer correctness and CRI may be premature. They therefore call for empirical testing of the hypothesis stated by Hasan et al. (1999).

Responding to this call, the present study investigates whether CRI is a reliable predictor of pupils' misconceptions related to contour lines on maps. To examine the predictive power of CRI, a four-tier conceptual test on contour lines was administered, followed by semi-structured interviews with selected participants. The interviews aimed to confirm or refute whether participants labelled as holding misconceptions by the four-tier test actually hold misconceptions. This presentation reports preliminary findings focusing on lower-secondary pupils and their conceptual understanding of contour lines.

Keywords: conceptual understanding, misconception, CRI, 4-tier test, interview, methodological validity, contour lines

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Reconsidering Hometown Learning and Place-Based Learning in Japan: A Capability Approach to Children's Freedom

Mako Miyaji

Hometown Learning (HL) and Place-Based Learning (PBL) are often treated as similar approaches in Japan because both emphasise learning rooted in local communities. However, important differences may exist in their educational purposes and in how they position children as learners and agents. Drawing on Amartya Sen's Capability Approach (1999), this study reconsiders the distinction between HL and PBL from the perspective of children's substantive freedom to choose their relationship with place.

In Japan, HL typically focuses on helping children become familiar with their local area and develop a sense of attachment to it (e.g., UNESCO ASPnet, 2021). In this sense, HL can function as a "secure base" that supports identity formation and provides emotional stability (Proshansky et al., 1983; Scannell & Gifford, 2010; Lewicka, 2011). By contrast, PBL has developed in various international contexts as an approach that encourages inquiry into local issues, engagement with sustainability, and critical reflection on one's relationship with place (e.g., Sobel, 2004; Gruenewald, 2003; Greenwood, 2008). Rather than assuming attachment as a predetermined goal, PBL may create space for children to question, reinterpret, and reconstruct their connections to place.

This study examines how children's sense of security and agency are cultivated differently in educational practices that primarily aim to foster attachment to a locality and those that expand children's freedom to reconsider and choose how they relate to that locality. Within the contexts of sustainability and geographical education, HL can serve as a "secure base" for children's exploration. However, to align with a capability-oriented framework, it must also support children's freedom to negotiate and redefine their own relationships with place.

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Sobel, D. (2004). Place-based education: Connecting classrooms and communities. Orion Society.

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Beyond Doom and Gloom: Reframing Uncertainty in Climate Change Education for Future-Ready Learners

Roger C. Baars

Climate change education in many schools today is dominated by what this paper calls a “doom and gloom” pedagogy: a mode of teaching that regularly frames the future as certain, catastrophic, and somewhat beyond the meaningful influence of learners. Drawing on threat-based messaging and fact-heavy teaching materials, such approaches risk generating anxiety, disengagement, and a sense of helplessness among students.

Yet in a world that is increasingly shaped by high levels of uncertainty, ranging from climate change and pandemics to armed conflicts and economic instability, preparing young learners to navigate their unknown futures requires more than conveying alarming facts. This paper argues that effective climate change education must move beyond doom and gloom and embrace pedagogical approaches that reframe uncertainty as a space for critical thinking, agency, and hope.

To investigate how such reframing might look in practice, the paper presents findings from qualitative fieldwork conducted in three secondary schools in Kyoto, Japan. The study is organized into three sections. First, the analysis of teaching materials and guidelines exposes the prevalence of threat-based and certainty-oriented framings in current climate change curricula. Second, teacher voices illustrate how educators navigate, and are often constrained by, these dominant framings, and what alternative strategies some have developed to foster empowerment and self-efficacy in their students. Third, the paper draws on these findings to propose how initial teacher training and professional development could better equip teachers to reframe uncertainty as a productive, rather than paralyzing, dimension of climate change education.

Children's experiences in their local environments in Ireland - 20 years on

Susan Jane Pike

From our own experiences as children, and from research into children's lives, it is evident that children's experiences in their local environments are significant. In the 2000s, the Children's Local Environment (CLE2000s) Project investigated Irish children's experiences, including their learning, in the local environments, including the following aspects of their experiences:

- How children used their local environments;
- The influences on children's experiences in their local environment;
- Children's views of their current and future local environments;
- How experiences in the local environment contribute to children's learning;
- The relationships between children's learning in their local environment and their learning at school.

This research was published in IRGEE and elsewhere, revealing children had a range of experiences in their local area, from their own homes to the wider locality. They valued these experiences, especially when they were with family and friends. Children spoke at length about the places and people, and the adventures they had. In school, children were all learning geography, which occasionally included lessons on the local area. The children had a large range of ideas about how their area may change in the future, but most did not want their area to change too much.

A new project, CLE2020s is now investigating the same aspects, along with discovering patterns of and reasons for changes in children's experiences in their local environment changed over 20 years. In 20 years, the influences on children's lives have changed in many dimensions, they are living in a time of changing environments, climates, populations and technologies.

A 2020 version of the project is being carried out with children in the same schools. From children's initial ideas a range of mixed research methods are once again being used, such as drawing, photographs, writing, questionnaires, discussions and other activities. To date, data has been created with children in two schools. This paper provides some early insights into this 2020s study.

Session 6 (Amphai Sucharitkun: Room 110, Time: Thu, 11 June 11:00-12:30 [Day 2])

Educating for Climate and Sustainability Action: Teachers, Literacy and Interdisciplinary Pathways

Paper	**Author**
Perceptions and Approaches to Climate Change Education (CCE) in Social Studies Education: A Case Study of Secondary School Teachers in the Bangkok Metropolitan Region, Thailand	Jinnawat Lertpradit, Chutpong Pinpun
Climate Action Teachers 2.0: Reimagining Sustainability Education through Interdisciplinary, Digital, and Community-Engaged Innovation	Sally Wai-Yan Wan, Arthur Pak-Hei Lam, Harold Lam, Michael Shong Tung Leung, Fuangarun Preededilok, Suzannie Kit-Ying Leung, Ng Wing Hei (Rain)
Pre-service and in-service teachers' conceptions of (mis-)information and fake news in the context of climate change	Karen Wolckenhauer, Melissa Hanke, Sandra Sprenger
Potential Mediation of The Central Catchment in Singapore on The Effects of the Monsoons	Sriyan Maddukuri, Achyut Aravindh, Kenneth Y T Lim
Geography in the European Baccalaureate program: Teaching environmental action and sustainable environment	Mariëlle Prins

Perceptions and Approaches to Climate Change Education (CCE) in Social Studies Education: A Case Study of Secondary School Teachers in the Bangkok Metropolitan Region, Thailand

Jinnawat Lertpradit, Chutpong Pinpun

Climate change has become an important topic that must be integrated into education to promote awareness and adaptation among the next generation of citizens. This research aims to explore perceptions and understandings of climate change among social studies teachers, analyse teaching approaches, and evaluate the effectiveness of related projects in secondary schools in Bangkok and its surrounding areas. This qualitative research employed focus group interviews with eight social studies teachers from diverse teaching experiences and school contexts.

The research findings indicate that most teachers are aware of CC in terms of physical change and recognise that human activities primarily cause it. Initial learning approaches emphasise linking CC to disasters and drawing on stories from the immediate environment to help students understand and adapt. Teachers agree that Thailand's current core curriculum content is sufficient to foster understanding of CC. They recommend emphasising its integration across all social studies subjects rather than requiring a separate subject.

However, significant obstacles have been identified that hinder efforts to raise awareness: 1) students' behaviours lacking long-term awareness, often focusing on personal comfort (e.g., excessive use of air conditioning); and 2) ineffective programs. External environmental programs are often used for rewards rather than to promote understanding or change behaviour. Policy recommendations, therefore, focus on developing teachers as role models, creating an environment conducive to practical practice, and organising activities that expose students to real-world events or direct experiences to enhance awareness and lead to sustainable behaviour change.

Climate Action Teachers 2.0: Reimagining Sustainability Education through Interdisciplinary, Digital, and Community-Engaged Innovation

Sally Wai-Yan Wan, Arthur Pak-Hei Lam, Harold Lam, Michael Shong Tung Leung, Fuangarun Preededilok, Suzannie Kit-Ying Leung, Ng Wing Hei (Rain)

In a world characterised by accelerating climate risk, socio-environmental transformation, and deepening inequalities, sustainability education must move beyond awareness-raising toward transformative, action-oriented learning. This paper presents Climate Action Teachers 2.0, a university–school–NGO collaborative initiative designed to advance Education for Sustainable Development (ESD) through interdisciplinary knowledge integration, digital innovation, and community participation.

The project brings together prospective teachers, undergraduates from diverse disciplines (e.g., geography, economics, life and environmental sciences), in-service secondary teachers, and NGO and museum education partners to co-design climate and sustainability learning experiences. It frames sustainability challenges—such as urban heat, biodiversity loss, waste systems, and coastal vulnerability—as complex, place-based issues shaped by interconnections among environmental processes, socio-economic systems, and governance structures. Through inquiry into local case studies situated within global sustainability frameworks and the SDGs, participants engage critically with questions of responsibility, resilience, and ethical action.

A key innovation of the model is its integration of digital and AI-supported pedagogies to deepen systems thinking and interdisciplinary collaboration. Workshops and micro-modules introduce digital storytelling (e.g., StoryMaps), climate data visualisation, and responsible uses of generative AI to support inquiry, curriculum design, and project-based learning. Interdisciplinary teams co-create lessons that guide secondary students in designing community-centred sustainability projects that combine scientific understanding, spatial analysis, critical reflection, and collaborative action.

Rather than reporting empirical findings, this presentation outlines the project's conceptual framework, pedagogical architecture, partnership structure, and evaluation design. It argues that effective sustainability education requires integrative approaches that connect the life and environmental sciences, social inquiry, digital innovation, and place-based and spatial understanding. Geography plays a critical enabling role by foregrounding scale, interdependence, and human–environment relationships within sustainability learning. By sharing a replicable model rooted in Southeast Asian contexts yet globally relevant, the paper contributes to global dialogue on how education can cultivate informed, responsible, and future-ready learners committed to building more just and resilient sustainable futures.

Pre-service and in-service teachers' conceptions of (mis-)information and fake news in the context of climate change

Karen Wolckenhauer, Melissa Hanke, Sandra Sprenger

Although misinformation and fake news are not new phenomena, social media platforms are fundamentally reshaping information acquisition practices. They enable anonymity, offer vast potential reach, and lack sufficiently established gatekeeping mechanisms. Moreover, low barriers to participation, along with the speed and ease with which information can be created and disseminated, further facilitate the spread of misleading content. Young people turn to social media and other digital platforms for information. Research shows significant shortcomings in adolescents' ability to critically evaluate digital information, making them especially vulnerable. In the context of climate change, the ability to critically assess information is particularly crucial, as misinformation and fake news could interfere with public perception and influence decision making.

It is therefore crucial to empower students to engage critically with misinformation and fake news and to educate them as informed and responsible individuals who remain capable of judgment and action in complex, highly emergent contexts. This includes the ability to critically assess the credibility of information sources, even when the underlying scientific knowledge is complex and not yet fully accessible to them. Teachers play a key role in this process, as they design instruction, and thus share responsibility for fostering relevant science media literacy skills. Consequently, it is important to investigate teachers' conceptions and understandings of misinformation and fake news.

This study explores geography teachers' conceptions of misinformation and fake news using climate change as an example. To gain a comprehensive understanding, semi-structured interviews were conducted. The data will be analysed using a qualitative content analysis. Preliminary findings will be presented at the conference. Building on the results, the study aims to derive implications for pre-service and in-service teacher education, thereby contributing to transformative approaches in geographical education for sustainability.

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Potential Mediation of The Central Catchment in Singapore on The Effects of the Monsoons

Sriyan Maddukuri, Achyut Aravindh, Kenneth Y T Lim

Singapore's climate is greatly influenced by the North-East and South-West monsoons, the two primary monsoons that directly influence Singapore's weather, both of which bring about a season of rainfall when they occur. Thus, this study aims to investigate the potential mediational effect of Singapore's central catchment on the effects of the monsoon through the analysis of data from Meteorological Service Singapore (MSS) on both the North-East and South-West regions of Singapore during the monsoonal seasons. It was hypothesised that orographic rainfall is one of the main causes of rainfall difference between the South-West and North-East sides of Singapore in addition to the monsoon rains, causing the North-East region of Singapore to contain more rainfall during the North-East monsoon and vice versa during the South-West monsoon.

Weather stations were chosen in the direction of the monsoon, with an equal number of stations in both the North-East and South-West regions of Singapore to increase accuracy in our datasets. A paired t-test was conducted to isolate the potential influence of the Central Catchment on rainfall distribution across Singapore and obtain the mean difference in rainfall across the North-East and South-West monsoonal periods. A p-value was also obtained, which assisted in the evaluation of the data's statistical significance. The t-test results revealed that the South-West region of Singapore consistently had more rainfall than the North-East regardless of the monsoon.

These findings suggest that while monsoonal wind direction and orographic effects may influence rainfall patterns, other factors such as urbanisation-driven convectional rainfall or possibly even large-scale climatic phenomena such as La Niña also play an important role in the formation and distribution of rainfall in Singapore. This study informs geographical education by offering a locally grounded case through which learners could explore how atmospheric circulation, relief, and land use interact to shape rainfall patterns. The study could be translated into inquiry-based lessons using authentic MSS station data, supporting students' skills in interpreting spatial variability, applying statistical reasoning, and evaluating competing explanations. It also provides a context for fieldwork and GIS mapping aligned with curriculum goals on climate and sustainability.

Geography in the European Baccalaureate program: Teaching environmental action and sustainable environment

Mariëlle Prins

Teaching sustainability to upper high school students is often difficult. Many students experience a certain climate fatigue from repeated exposure to the topic since kindergarten. Climate change is often perceived as something that has its origins far away in both place and time. At this age, however, we aim for students to develop the intellectual courage to address complex issues. Encouraging students to develop agency when facing climate change, is a first step. This can be done by offering learning situations in which they not only gain knowledge but are also pushed to develop solutions. Building upon this sense of agency, we can aim to foster transformative learning opportunities, influencing the way in which they perceive climate change. This requires the students not only to be engaged, but also requires developing analytical, creative and communicative skills.

This presentation will share classroom experiences gained in teaching climate action within the European Baccalaureate (EB) program. In contrast to most national geography curricula, the EB geography curriculum emphasizes the importance of integrating climate action education. Geography is a mandatory subject for all EB-students and teachers enjoy considerable autonomy in tailoring their teaching.

The focus on action implies that students are encouraged to think in terms of solutions and strategies, strengthening their sense of agency and shifting their perspectives. Teaching sustainability if not limited to environmental modules. For example, sustainability is a requirement when younger students redesign their school in an urban geography module. Older students are expected to evaluate international agreements (EU Green Deal), sector specific policies (Common Agriculture Policy) and economic strategies (restructuring of the car industry). Instead of perceiving climate change as an external threat, students are led to analyse and discuss the environmental dimension as an integral part of the actions taken to shape our world. Climate change and sustainability are considered a driving force behind the way in which we shape the world (be it through design or land use) and underpinning policies choices and economic strategies.

Session 7 (Sumon Amornvivat : Room 102/1, Time: Thu, 11 June 11:00-12:30 [Day 2])

From Learning to Participation: Rethinking the Role of Geography Education in Youth Participation and Sustainability

Paper	**Author**
Schools as Enablers of Youth Participation. Fostering Spatial Citizenship in Geography Education Through Data-Driven Project-Based Learning: Insights from the "Mobility Transition in Essen" Project	Lisa Wieczorek
Exploration of Implementation Strategies and Paths for Ecological Civilization Education	Fengtao Guo
Geography Undergraduate Student Teachers' localising the Sustainable Development Goals in Water Pollution Projects: A Case study of two countries	Sadhana Manik, Vibeke Vagenes
Borderland Pedagogy and Sustainability Education: Upper Silesia as a Contested Post-Industrial Case for Geographical Education	Geza Barta

Schools as Enablers of Youth Participation. Fostering Spatial Citizenship in Geography Education Through Data-Driven Project-Based Learning: Insights from the “Mobility Transition in Essen” Project

Lisa Wieczorek

The world is undergoing profound socio-ecological transformations, including the mobility transition. Consequently, the development and implementation of sustainable mobility concepts have become increasingly important. At the same time, young people remain largely underrepresented in related planning and decision-making processes, despite being experts of their everyday environments whose knowledge can meaningfully inform policy and decision-making. Innovative approaches are therefore required to enable authentic youth participation while fostering competencies for civic engagement.

This contribution presents a school-based participation project that has been developed and evaluated to empower students as active Change Agents while positioning schools as societal actors. Through data-driven learning, the project creates authentic participation opportunities, supports participatory competencies, and fosters students’ development as Spatial Citizens. Using a sensor-based bicycle toolkit, students collected data on cycling conditions along their daily routes and developed evidence-based recommendations for urban mobility planning. Collaboration with stakeholders from science, civil society, and local politics enabled students to contribute their results to local decision-making processes.

The study follows a mixed-methods design. Quantitatively, project-accompanying surveys employed established scales measuring political self-efficacy, willingness to participate, and attitudes towards the mobility transition. Semi-structured interviews with selected students (n=16) explored experiences of participation, agency, and the role of digital geomedia. In addition, interviews with participating teachers reflected institutional conditions and opportunities for sustaining participatory structures in schools. Preliminary findings indicate that data-driven participation formats can strengthen political self-efficacy, sense of agency, and willingness to participate. Digital geomedia offer new perspectives on complex mobility issues and support students’ evidence-based contributions to local decision-making.

The project highlights schools as low-threshold entry points for civic engagement and provides insights for transformative geographical education by demonstrating how participatory, evidence-based learning can move beyond symbolic participation towards real-world impact.

Exploration of Implementation Strategies and Paths for Ecological Civilization Education

Fengtao Guo

This paper systematically elaborates on the development background, theoretical foundations, current challenges, and implementation strategies of ecological civilization education in China. Driven by national strategic designs, fundamental educational missions, and the real-world urgency of compound global ecological crises, this study emphasizes the critical significance of ecological civilization education in cultivating modern citizens equipped with ecological cognition, responsibility, and action capabilities.

Through a comprehensive analysis of the current educational landscape in China, the paper identifies several core bottlenecks, including an insufficient demonstration of Chinese contextual characteristics, a prominent disconnect between educational theory and practice, an uneven regional distribution of educational resources, and inadequate implementation capacity among teachers.

To effectively address these challenges, particularly by leveraging geographical education's core competency of human-earth coordination, this study thoroughly explores three primary implementation strategies. The first strategy is deepening interdisciplinary thematic teaching, which utilizes geography as a core subject to organically integrate natural sciences and humanities, thereby fostering a systemic understanding of human-environment relationships. The second strategy focuses on expanding field practices and study tours by employing immersive outdoor fieldwork and empirical observation to bridge the cognition-action gap and enhance practical environmental problem-solving skills. The third strategy involves constructing a multi-agent collaborative mechanism to establish a synergistic and supportive educational network involving schools, communities, governments, ecological enterprises, and families. Furthermore, this paper outlines future developmental trajectories, pointing toward the deep integration of ecological civilization education with STEM frameworks and Artificial Intelligence technologies to promote innovative, equitable, and personalized ecological learning environments.

Geography Undergraduate Student Teachers' localising the Sustainable Development Goals in Water Pollution Projects: A Case study of two countries

Sadhana Manik, Vibeke Vagenes

This qualitative, interpretivist study aimed to explore the transformation of undergraduate student teachers, from two countries in the global south, as student teachers' understood, analysed and prioritized a range of SDG-related challenges and embarked or not on environmental interventions. Our research focus was on climate change, the destruction of wetlands, and plastic pollution. Student teachers from South-Africa and Tanzania participated, and our data gathering tools were multiple: interviews, documentary videos and written narrative evidence.

Our theoretical architecture comprised theories of change (Reinholz and Andrews, 2020) and transformation (O'Brian & Sygna, 2013). Our findings indicate that systemic understanding of local challenges can be seen as a key competence to address environmental education and sustainability. This study illuminated aspects of transformation: how student teachers identified the relevant stakeholders, prioritized practical solutions to the problem they encountered at local level, reflected on the educational outcome/s of focusing on the problem, including their individual practice, collective intervention and attached values.

We argue that a theory of change and transformative education is needed to underpin Geography curriculum design to prepare undergraduate student teachers as this can facilitate understanding of the complex relations between different stakeholders and local environmental challenges, and initiate action and transformation across multiple interconnected spheres and work towards sustainable futures.

Borderland Pedagogy and Sustainability Education: Upper Silesia as a Contested Post-Industrial Case for Geographical Education

Geza Barta

This paper proposes Upper Silesia, a contested post-industrial borderland in Central Europe, as a conceptually rich case for borderland pedagogy within geographical education for sustainability. It starts from the premise that sustainability education should not be confined to environmental content alone, but must also engage with questions of social sustainability, including identity, memory, inequality, post-industrial transformation, and contested territorial belonging.

The argument draws on traditions of border pedagogy and borderlands pedagogy, which approach education as a space for critically engaging with difference, power, historical conflict, and lived in-betweenness. From this perspective, Upper Silesia is treated not simply as a regional example, but as a pedagogically generative site through which learners can examine how borders are historically produced, institutionally sedimented, and negotiated in everyday life. The paper brings into dialogue historical research on schooling and language politics in interwar Upper Silesia with contemporary research on regional and ethno-regional identity, border narratives, memoryscapes, and post-industrial landscapes.

Methodologically, the presentation is conceptual yet informed by practice. It builds on doctoral research based on field observations, interviews, discourse analysis, and questionnaire data, while also drawing on the author's 20 years of secondary school teaching experience. This dual perspective enables a reflection on how complex and contested regions may be translated into meaningful forms of geographical learning.

The paper's main contribution is to outline a framework for research-informed, place-based geographical education that may be particularly relevant to teacher educators, geography education researchers, curriculum developers, and reflective practitioners. It argues that teaching contested regions such as Upper Silesia can broaden sustainability education beyond narrowly ecological interpretations and support historically informed, spatially sensitive, and critically reflective forms of citizenship education.

Session 8 (Amphai Sucharitkun: Room 110, Time: Thu, 11 June 11:00-12:30 [Day 2])

Rethinking Geography Education: Knowledge, Relations and Critical Perspectives for Sustainability

Paper	**Author**
Curriculum for Sustainability: Promoting sustainable development in Pre-service teacher training in higher education institutions	Thoko Poppy Mahlangu
Pathway selection and configuration optimization of pre-service teacher employment mobility	Siyao Li, Guo'an Tang
Developing Geography Teaching Expertise: Enablers from Expert Teachers' Perspectives	Nina Scholten, Lisa Wieczorek
Uncomfortable but Necessary: Bringing Gender into Geography Education for Sustainability	Kim Hyunjin

Curriculum for Sustainability: Promoting sustainable development in Pre-service teacher training in higher education institutions

Thoko Poppy Mahlangu

Sustainable development has emerged as a critical global priority, positioning tertiary institutions as key agents in preparing future teachers to address complex social, environmental and economic challenges. Higher education institutions (HEIs), as they are responsible for preparing future teachers, play a vital role in advancing sustainability through curriculum design and pedagogical practice.

The study investigates how sustainability is conceptualised, enacted and integrated within pre-service teacher training curricula in HEIs. This study explores how sustainability and sustainability principles are integrated into pre-service teacher training curricula within HEIs, with a specific focus on the structural, pedagogical and institutional practices that support Education for Sustainable Development (ESD). It also explores how curricula can be intentionally structured to cultivate sustainability competencies among emerging teachers.

This study employs a qualitative case study methodology, exploring the perceptions, experiences, practices, and perspectives of teacher educators within a South African institution to understand how pedagogical strategies, curriculum structures and institutional commitments shape Education for Sustainable Development. Data will be generated through semi-structured interviews, with six university lecturers. Guided by the conceptual framework of teacher agency and the Transformative Learning Theory, the study examines enabling conditions and structural challenges that influence sustainability integration in teacher preparation.

The argument in this chapter is that embedding sustainability in teacher education requires a paradigm shift toward institutional commitment, transformative pedagogy and collaborative partnerships. The findings will elucidate how HEIs can strengthen teacher agency, cultivate sustainability competencies and foster transformative learning in promoting sustainable development.

Keywords: curriculum development, education for sustainable development, sustainability, sustainable development, pre-service teachers, teacher agency, transformative learning

Pathway selection and configuration optimization of pre-service teacher employment mobility

Siyao Li, Guo'an Tang

As China's basic education enters a critical phase of transition from "basic equilibrium" to "high-quality equilibrium," the balanced allocation of high-quality teachers has received unprecedented attention. Teacher mobility mechanisms have consequently become a normalized instrument for optimizing teacher allocation. As a pivotal node in teacher workforce development, higher teacher education closely connects upstream pre-service teacher training with downstream teacher allocation.

The employment choices of pre-service teachers from elite normal universities reflect, to some extent, the source distribution of high-quality teachers, thereby playing a pioneering role in balanced teacher allocation. Against this backdrop, this study focuses on graduates from 18 teacher majors over four consecutive years at a normal university included in the "double world-class project". Employing Social Network Analysis (SNA), it conducts a preliminary investigation into the diverse mobility patterns of pre-service teachers between their places of origin and employment, deconstructing the pathway selection mechanisms governing individual employment mobility across "provincial-municipal-school" spatial scales and explores their potential impact on high-quality teacher allocation.

Key findings reveal: (i) The initial interprovincial mobility of high-quality pre-service teachers exhibits a pronounced siphon effect. With the host province of the normal university acting as a "super-core node," an overall pattern emerges: agglomeration in China's eastern coast, synergistic linkage within Central China's pivotal provinces, and brain drain in Northeast and Western China. (ii) The initial intercity mobility displays distinct urban hierarchy gradients, forming a multi-tiered attraction pattern: core eastern cities siphoning talent nationally, while provincial capitals in Central and Western China attract primarily within their respective provinces. (iii) School-level allocation within cities demonstrates a differentiated logic: "passively balanced" allocation in higher-tier cities versus "actively polarized" allocation in lower-tier cities.

Uncomfortable but Necessary: Bringing Gender into Geography Education for Sustainability

Kim, Hyunjin

This presentation examines how bringing gender into geography education can help students critically analyze inequalities in the world. It is based on my lesson practices in secondary geography teacher training courses in Japan. In designing lessons that enable students to approach gender as geographical content, I drew inspiration from geography education in Western countries in the late 1980s and early 1990s, particularly the New Wave Geography textbooks developed in Australia.

These textbooks encourage students to apply geographical knowledge and skills to the analysis of contemporary social issues. One unit in the textbooks, Barbie goes abroad, traces shift in the global locations of doll manufacturing. It highlights the experiences of South Korean women factory workers in the early 1980s and asks students to predict the next likely site of production. More than twenty years later, toy manufacturing remains concentrated in Asian countries, particularly China. The working conditions of Chinese women in the 2020s can be read as a continuation of unequal power relations embedded in global production networks. Through this case, students can see how gender is intertwined with processes of globalization and uneven development.

To extend this discussion, the lessons introduce comparative gender indicators that reveal how inequality operates across national contexts. Gender, as a factor shaping life opportunities, provides a lens for questioning simplistic distinctions between “developed” and “developing” countries. According to the Global Gender Gap Report 2025, Japan ranks 118th, with South Korea at 101st and China at 103rd. Many Japanese students are surprised to learn that several African countries rank above Japan. These comparisons encourage students to challenge stereotypes about developing countries and to think comparatively about gender inequality in their own society. Bringing gender into geography education may create what has been described as an “uncomfortable classroom,” as it confronts deeply held assumptions. However, this productive discomfort can foster critical reflection and empower students to imagine more just, resilient, and sustainable futures.

Session 9 (Sumon Amornvivat: Room 102/1, Time: Thu, 11 June 15:30-17:00 [Day 2])

Geographical thinking in development: student (mis-)conceptions and map-based reasoning

Paper	**Author**
Experiential learning and geography teacher education: a case study for learning landscape in Spain	Rafael de Miguel González, Cristina Honrubia Montesinos & Gema Sánchez Emeterio
Developmental patterns in pupils' (mis)understanding of contour lines	Lenka Krajňáková, Martin Hanus, Tomáš Bendl, Miroslav Marada, Oldřich Mokruša
From Maps to Minds: Exploring Structural and Processual Differences in Students' Systems Thinking in a Geographical Concept Mapping Task	Natalie Bienert, Rainer Mehren, Jennifer Meister
Analyzing Differences in Students' Thematic Map Reading Skills Based on Learner Attributes: Implications for Geography Education	Ratih Puspita Dewi
Challenges in the Use of Maps in Japan's High school "Geography": Toward Geography Lessons that Enable Students to Envision the Future of Their Regions	Koji Ohnishi, Asahi Tanaka

Experiential learning and geography teacher education: a case study for learning landscape in Spain

Rafael de Miguel González, Cristina Honrubia Montesinos & Gema Sánchez Emeterio

This paper shows the influence of experiential learning on the construction and mental representation of landscape among pre-service primary school teachers. From the perspective of social representations (García Monteagudo, 2024), it analyzes how lived experiences, autobiographical memories, and specific cultural references act as cognitive frameworks that guide the evocation and interpretation of landscape, shaping meanings that go beyond the mere physical dimension of territory. The aim is to provide evidence supporting the design of training proposals based on active methodologies—particularly fieldwork and other immersive practices—in university-level Geography education.

A mixed-methods questionnaire consisting of 32 items was administered to 116 students enrolled in the Bachelor's Degree in Primary Education (M = 19.06; SD = 0.96), with specific attention paid to items related to the description, interpretation, and explanation of landscape. A Concurrent Mixed Methods design (Onwuegbuzie & Teddlie, 2003) was adopted, enabling the triangulation of quantitative and qualitative patterns to explore the cognitive mechanisms involved in landscape representation. Quantitative results indicate that 56.0% of students based their drawings on direct experiences; thus, more than half of the representations emerged from lived realities. A further 24.1% referred to non-specific landscapes, 8.6% drew on media images, 7.8% depicted real but unvisited landscapes, and 3.4% represented fictional or culturally constructed scenarios.

Qualitative data highlight the central role of emotional and biographical dimensions in landscape construction. Seventy-nine participants represented places they had directly experienced, including travel destinations, territories of origin, or childhood environments, often described with strong affective connotations.

Overall, the findings confirm that landscape is a socially and subjectively constructed entity emerging from the interaction between experience, memory, affectivity, and culture. These results reinforce the need to integrate experiential approaches and active geographical methodologies in initial teacher education, including field trips, interpretative walks, emotional mapping, and spatial evocation activities that enable future teachers to understand the pedagogical value of geographical experience. Strengthening such practices contributes to deeper, more critical, and reflective spatial literacy, preparing teachers to approach landscapes not merely as physical objects, but as lived and socially constructed realities.

Developmental patterns in pupils' (mis)understanding of contour lines

Lenka Krajňáková, Martin Hanus, Tomáš Bendl, Miroslav Marada, Oldřich Mokruša

Contour lines represent a fundamental yet conceptually demanding means of depicting relief on maps. A sound understanding of contour lines is essential not only for map reading and navigation, but also for informed spatial decision-making (e.g., in relation to natural hazards or urban planning). Despite their importance, previous research has shown that difficulties in understanding contour lines might persist even among university students.

Although comprehending how this (mis)understanding develops across different educational levels may offer valuable insights for geography education, this issue remains underexplored. Therefore, the presented research addresses the following research question: How do pupils of various ages differ in their conceptual understanding of contour lines and their confidence in that understanding?

The study employed a four-tier conceptual test designed to assess pupils' conceptual understanding of contour lines as well as their certainty in answers and underlying reasoning. Data were collected from three age groups representing different (primary and secondary) educational levels: Grade 4 (9 to 10 years old), Grade 8 (13 to 14 years old), and Grade 12 (17 to 18 years old). Each group comprised approximately 300 pupils from various schools in Czechia. Participants' responses were analysed to identify pupils' distribution based on their conceptual understanding and response certainty. In addition, common alternative misconceptions were identified based on the four-tier test results. Particular attention was paid to the differences in conceptual understanding between younger and older pupils and the persistence of misconceptions despite increased educational experience.

Keywords: conceptual understanding, misconception, cross-age study, contour lines, cartography

From Maps to Minds: Exploring Structural and Processual Differences in Students' Systems Thinking in a Geographical Concept Mapping Task

Natalie Bienert, Rainer Mehren, Jennifer Meister

Developing students' ability to understand and model complex human–environment systems is a central goal of geography education. While a growing body of research has documented what quality learning products (e.g., concept maps) look like, far less is known about how systems thinking emerges during systemic tasks. Existing research has largely focused on describing average student performance, while systematic comparisons between high- and low-performing systems thinkers remain rare, leaving it unclear what qualitatively distinguishes powerful from weak systems thinking in both learning products and learning processes.

Addressing this gap, this presentation integrates findings from two complementary qualitative studies that combine a product perspective with a process perspective on students' systems thinking during a concept mapping task. The first study analyses finalised concept maps created by Grade 9 students during a geographical mystery task on Somali piracy as a complex socio-environmental system. Using a variance-maximised design, high- and low-performing systems thinkers were compared. Results show profound qualitative differences: powerful systems thinkers construct dense, multicausal and multi-perspective concept networks, integrate feedback loops and temporal dynamics, use differentiated geographical concepts and operate on higher levels of abstraction. In contrast, weaker systems thinkers produce mainly linear, monocausal and low-density representations, indicating surface-level systemic understanding.

The second study examines the genesis of these differences through video-based qualitative content analysis of students' collaborative concept map construction. It shows that high- and low-performing systems thinkers differ fundamentally in their modelling processes. High-performing groups employ strategic and proactive approaches: they plan and structure information, generate and negotiate concepts, explicitly reason about feedback, uncertainty and alternative explanations, and regulate their work metacognitively through dialogic, balanced and hypothetic-conditional interaction. Low-performing groups, in contrast, rely on reactive and reproductive strategies: they process information unsystematically, reproduce given concepts without abstraction, construct mainly linear and weakly specified relations, and show little metacognitive regulation, with predominantly monologic and uneven collaboration.

Together, the twin studies demonstrate that systems thinking is not simply an individual cognitive achievement, but a social, dialogic and metacognitively regulated learning process that becomes visible both in students' learning products and in their collaborative interactions.

Analyzing Differences in Students' Thematic Map Reading Skills Based on Learner Attributes: Implications for Geography Education

Ratih Puspita Dewi

Maps are an effective media for conveying spatial information, including disaster information. Maps communicate spatial information in the form of symbols and define by certain scale that require specific skills to comprehend. Without the ability to read the information in the map, the existence of a map would not provide significant benefits as a disseminator of geographical information. This research aims to analyze (1) students' ability to read disaster hazard maps, (2) differences in map reading abilities based on grade level, (3) differences in map reading abilities based on gender, and (4) differences in map reading abilities based on disaster experience. The approach used is quantitative with a comparative design.

The population in this study were students at SMP Negeri 2 Jatinom (Public Junior High School 2 Jatinom), Klaten Regency, Central Java, Indonesia. The total population was 803 students and was calculated using the Slovin formula to obtain a sample of 268 students. Data collection uses tests. The data analysis technique uses scoring techniques to determine the results of map reading ability and inferential statistical tests to determine differences in students' map reading ability based on class level, gender, and disaster experience.

The results of the research show that (1) students' ability to read disaster hazard maps is in the "good" category with the highest score in determining the map symbol. (2, 3, 4) inferential test results show that there is no difference in the ability to read maps between grade levels, gender, and disaster experience.

Challenges in the Use of Maps in Japan's High school "Geography": Toward Geography Lessons that Enable Students to Envision the Future of Their Regions

Koji Ohnishi, Asahi Tanaka

Since 2022, High school "Geography" has become a compulsory subject in Japanese. The curriculum consists of three topics: 1) understanding the contemporary world through maps and GIS, 2) international understanding and international cooperation, and 3) sustainable regional development. The aim of this study is to identify the map- and GIS-related skills and knowledge required of teachers in the field of international understanding and international cooperation. To achieve this aim, questionnaire and interview surveys were conducted with geography teachers in Toyama Prefecture.

The findings reveal a clear contrast in the use of maps and GIS across different units. While these tools are actively employed in physical geography and disaster prevention in topic 3), their use remains limited in the topic 2) international understanding and international cooperation. Several factors contribute to this situation: the conceptual and abstract content, limited instructional time, insufficient opportunities for lesson preparation, and inadequate ICT and network environments. These factors collectively make it difficult for teachers to connect geographical knowledge with global social issues and to incorporate maps and GIS effectively into their teaching.

International understanding requires not only identifying global issues but also envisioning desirable future scenarios for the world. As demonstrated by the SDGs, envisioning a "desired future" involves not only abstract ideals but also the formulation of concrete and attainable goals. Japanese geography education has traditionally excelled at extracting societal issues but has been less successful in guiding students to think concretely about how to address them. This tendency is reflected in the limited use of maps and GIS in this field. The study suggests that expanding the repertoire of map-based teaching materials and strengthening collaboration across geography, history, and civics will be essential for enhancing teacher expertise and promoting more effective integration of maps and GIS in international understanding and international cooperation education.