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UNIVERSITY OF THE
AEGEAN



RE-VISIONING GEOGRAPHY FOR SUSTAINABILITY IN THE POST-COVID ERA

ANNUAL EUROGEO CONFERENCE 2022
5-7 May 2022

University of the Aegean, Mytilene, Lesbos Island, Greece.



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Introduction

The 2022 EUROGEO Annual Meeting and Conference is organised in May 2022 in Mytilene, Lesvos, Greece, to present outcomes of geographical or interdisciplinary research related to the theme: “RE-VISIONING GEOGRAPHY FOR SUSTAINABILITY IN THE POST-COVID ERA”.

This Conference comprised more than one hundred contributions: 3 keynote plenary sessions, 90 paper presentations, 13 posters, 5 workshops, 2 special sessions (GeoDem and Refocus) and one field trip. Conference attendees represent more than 20 European countries and 7 countries from other continents.

Conference Strands:

- How do geographers, universities, companies and education respond to Sustainable Development Goals and complex challenges in the context of the COVID pandemic?
- What is the role of Geography in the landscape of spatial technologies and open data and how can these assist in achieving SDGs?
- How new eco-social challenges are positioned in the face of a post-pandemic Global Change?
- How can we explore novel educational contexts and resources to transform towards sustainability of socio-ecological systems?
- What conceptual frameworks and strategies can contribute to the construction of societies based on human welfare and the care of nature?
- What are the interactions between Sustainable Development Goals, international migrations and refugees?

Basic Data and Venue

The University Campus is located approximately 4 km south of Mytilene, the capital City of Lesvos Island, and is easily accessible both from downtown and the “Odysseas Elytis” airport).



Getting to the Campus Hill by public transportation: Public bus services are linking directly the Mytilene city centre with the University Campus; however, this may require a further 5-minute uphill walk to the University Hill. The rate for a single fare is 1.10 EUR. Tickets can be purchased on the bus from the driver. The main bus station in Mytilene is located in Sappho Square. Here is the daily bus timetable from Sappho Square to the University Campus:

08:30; 08:40; 09:00; 09:30; 10:00; (every half an hour); 18:30; 19:30; 20:10; 20:30; 21:10.

Venue: Department of Geography, University of the Aegean, Mytilene, Lesvos Island, Greece.

<https://goo.gl/maps/3k1iMQ4zu8TkB2499>



Scientific and Organising Committees

Co-chairs of the Scientific Committee:

Rafael de Miguel González, President of EUROGEO and Professor at University of Zaragoza, Spain
Athanasios Kizos, Professor at the Department of Geography, University of the Aegean, Greece
Aikaterini Klonari, Em. Professor at the Department of Geography, University of the Aegean, Greece

Members of the Scientific Committee:

Nikolaos Soulakellis, Professor at the Department of Geography, University of the Aegean, Greece
Nikolaos Zouros, Professor at the Department of Geography, University of the Aegean, Greece
Michalis Vaitis, Assoc. Professor at the Department of Geography, University of the Aegean, Greece
Theano Terkenli, Professor at the Department of Geography, University of the Aegean, Greece
Olga Roussou, Department of Geography, University of the Aegean, Greece.
María Luisa de Lázaro Torres, Universidad Nacional de Educación a Distancia (UNED), Spain
Tjjana Illic, University of Nova Gorica, Slovenia
Karl Donert, National Teaching Fellow, UK
Kostis Koutsopoulos, National Technical University of Athens, Greece
Gerry O'Reilly, Dublin City University, Ireland
Daniela Schmeinck, Universität zu Köln, Germany
Luc Zwartjes, Ghent University, Belgium
Pavlos Delladetsimas, Em. Professor, Department of Geography, Harokopion University, Greece
Katia Lazaridi, Professor, Department of Geography, Harokopion University, Greece
Issak Parharidis, Professor, Department of Geography, Harokopion University, Greece
Hristos Chalkias, Professor, Department of Geography, Harokopion University, Greece
Nikolaos Lambrinos, Professor, Aristotle University of Thessaloniki, Greece
Angeliki Rokka, Professor, Democritus University of Thrace, Greece
Apostolia Galani, Assoc. Professor, National and Kapodistrian University of Athens, Greece
Ioannis Chorianopoulos, Professor, Department of Geography, University of the Aegean, Greece
Theodora Petanidou, Professor, Department of Geography, University of the Aegean, Greece
Kostas Kalabokidis, Professor, Department of Geography, University of the Aegean, Greece
George Korres, Professor, Department of Geography, University of the Aegean, Greece
Theodoros Iosifides, Professor, Department of Geography, University of the Aegean, Greece
George Sidiropoulos, Professor, Department of Geography, University of the Aegean
Hlektra Petrakou, Assoc. Professor, Department of Geography, University of the Aegean, Greece
Stelios Gialis, Associate Professor, Department of Geography, University of the Aegean, Greece
Chryssanthi Petropoulou, Assoc. Professor, Dept. of Geography, University of the Aegean, Greece

Members of the Organising Committee:

Rafael de Miguel González, President EUROGEO
Karl Donert, Vice President and Past President EUROGEO
Harry Rogge, Vice President EUROGEO
Michaela Lindner-Fally, Vice President EUROGEO
Gert Ruepert, Vice President EUROGEO
Tjjana Illic, Vice President EUROGEO
Gerry O'Reilly, Vice President EUROGEO
Daniela Schmeinck, Vice President EUROGEO
Kostis Koutsopoulos, Vice President EUROGEO
Luc Zwartjes, Treasurer and Vice President EUROGEO
María Luisa de Lázaro Torres, Secretary General EUROGEO
Aikaterini Klonari, Em. Professor at the Department of Geography, University of the Aegean
Athanasios Kizos, Professor at the Department of Geography, University of the Aegean
Dimitrios Kavroudakis, Ass. Professor at the Department of Geography, University of the Aegean
Anthoula – Styliani Passadelli, Post Doc researcher Department of Geography, University of the Aegean
Vana Chiou, Teaching staff at the Department of Geography, University of the Aegean
Olga Roussou, Teaching Staff at the Department of Geography, University of the Aegean

Conference Schedule

Time table	Thursday 5th May
8:30-9:00	Registration
9:00-9:30	Welcome ceremony
9:30-10:15	Open Conference: "Challenges and Opportunities: UNICEF's holistic approach in the protection of refugee and migrant children and systems' strengthening" by Mrs. Maria Michailidou, UNICEF Greece. (Presenter: Dr. Katerina Klonari, University of the Aegean)
10:15-10:45	Coffee break
10:45-11:30	Keynote presentation: "Beyond EU's harming and self-harming border regime. Towards a sustainable and humane migration policy" by Prof. Dr. Henk van Houtum, Radboud University Nijmegen. (Presenter: Drs. Harry Rogge, EUROGEO)
11:30-13:00	Parallel session 1
13:00-14:00	Lunch
14:00-15:30	Parallel session 2
15:30-16:30	Refocus documentary / Posters presentation
16:30-17:00	Coffee break
17:00-18.00	Workshops
18:00-19:30	EUROGEO Annual General Meeting and elections
20:00	EUROGEO Conference dinner (Hotel Elysion)

Time table	Friday 6th May
9:00-10:30	Parallel session 3
10:30-11:30	GEODEM session: Teaching in and about Europe
11:30-12:00	Coffee break
12:00-13:30	Parallel session 4
13:30-14:30	Lunch
14:30-15:30	Closing keynote presentation: "5 Forces, 5 Trends, and 5 Skills Critical to Geography and Geotechnology in the 2020s" by Dr. Joseph Kerski, Esri. (Presenter: Dr. Karl Donert, EUROGEO)
15:30-16:00	Closing ceremony

Time table	Saturday 7th May
8:30-18:00	Field trip. Departure: University Hill.

Keynote Presentations

(Auditorium)

Opening Conference: “Challenges and Opportunities: UNICEF's holistic approach in the protection of refugee and migrant children and systems' strengthening” by Mrs. Mariella Michailidou, UNICEF Child Protection Specialist.

(Presenter: Dr. Katerina Klonari, University of the Aegean)

As part of enhancing the protection for the increasing population of the most vulnerable groups reaching Europe, UNICEF, since April 2016 established a Refugee & Migrant Response Team in Greece. Based on experience from other countries in the so-called “Balkan route”, Blue Dots were set up, offering a holistic range of protection services for refugee and migrant families and children in reception centers and urban sites, who may be more vulnerable to violence, abuse and exploitation. In parallel, since November 2016, UNICEF also started implementing non-formal education (NFE) projects in various parts of Greece. In late 2017, significant adjustments took place within the Blue Dot concept, which may be summarized as follows:

- a) an NFE component was integrated into the CFSH, in order to provide a comprehensive package of CP and NFE services by a single partner in the same geographical locations
- b) the intervention was reshaped into Child and Family Support Hub (CFSH) in order to reflect the transition from a rather ad hoc set up catering to the needs of transient populations to a Hub where families that are becoming increasingly established can seek and receive an integrated package of support services;
- c) in view of the increasing establishment of the population, Mother and Baby Corners were transformed to form part of Women and Girls Safe Spaces, that is safe spaces where girls and women empowerment activities take place, with an increasing focus on GBV prevention and response

In parallel, the population of Unaccompanied and Separated Children (UASC) in Greece was sharply increasing since the start of the migrant/refugee crisis. The constant arrivals were putting additional burden on the specialized facilities for UASCs (shelters), resulting in lack of temporary and permanent accommodation places. UNICEF in response has taken urgent actions to assure children's protection and personal development by providing accommodation and protection through shelters, Safe Zones and alternative care models, such as Supported Independent Living and the building of a national guardianship system, which could strengthen integration and serve as a sound and sustainable solution for children.

Keywords: UNICEF, protection services, refuge and migrant children, Non Formal Education, Blue Dots

Keynote presentation: "Beyond EU's harming and self-harming border regime. Towards a sustainable and humane migration policy" by Prof. Dr. Henk van Houtum, Radboud University Nijmegen.

(Presenter: Drs. Harry Rogge, EUROGEO)

In this lecture Prof. van Houtum will argue that the EU, through its harming of the human rights of migrants, suffers from autoimmunity: a self-harming border policy. Drawing on Derrida's political understanding of autoimmunity, I contend that the root of this disorder lies in the EU's own b/ordering and othering policies, that is expressed in its material border architecture, as well as in its (visual) discourses and maps on migration. The discriminatory b/ordering and othering regime that has been created over the last decades, has led to a recurrent drawing of ever less porous, inhumane and deadlier borders. This finds itself at odds with the humanist values that the EU is supposed to uphold, particularly cross-border solidarity, openness, non-discrimination and human rights. The lecture will end with possible pathways to a sustainable and humane migration policy.

Closing keynote presentation: "5 Forces, 5 Trends, and 5 Skills Critical to Geography and Geotechnology in the 2020s" by Dr. Joseph Kerski, Esri.

(Presenter: Dr. Karl Donert, EUROGEO)

Five converging global forces present the geography and geospatial education communities with unprecedented world: attention: geo-awareness, geo-enablement, geotechnologies, citizen science and storytelling. Each of these is transforming the audience for GIS and the way GIS is taught, used, and perceived. Coupled with these forces are five trends shaping GIS: The integration of GIS with CAD and BIM (Building Information Management), 3D analytics, real-time data from the Internet of Things, web GIS as a platform, and Artificial Intelligence and Machine Learning. Five skills are emerging for students and professionals that are key to their success in decision-making roles in the future. These include curiosity, the ability to work with and be critical of data, geospatial foundations, adaptability, and communications.

Paper presentations in parallel sessions

5 May	Auditorium	Room 1	Room 2	Room 3	Room 4
Session 1 11:30- 13:00	V-Global	Geopolitics and naming (I)		Geospatial thinking	Landscape
Session 2 14:00- 15:30	Urban Geography - post pandemic	Geopolitics and naming (II)	Social Geography and spatial inequalities	International cooperation in Geography education	Rural Geography
6 May	Auditorium	Room 1	Room 2	Room 3	Room 4
Session 3 9:00-10:30	Geospatial technologies	Climate change	Risk reduction education	Geography education	Cultural Geography and Heritage
Session 4 12:00- 13:30	GIS	Global issues	Environment	Geography education for sustainable development	GI Pedagogies

Session V-Global

Chair: Caroline Leininger-Frézal

Authors	Paper title
Maria Angeles Rodriguez Domenech	Goals, resources and proposals for university teachers in the face of the new global challenges
Sandra Sprenger, Caroline Leininger-Frézal	Virtual field trips on ESD context
Kerstin Michalik	Digital (and virtual) formats in primary pre-service teacher education – Orientation in space
Maria Luisa de Lázaro, Marta Gallardo, Francisco José Morales Yago	Producing story maps for teaching and learning on sustainability at university
Juan José Pons Izquierdo	Using story maps as a tool for the sustainability: a literature review

Session Urban Geography - post pandemic

Chair: María Sebastián López

Authors	Paper title
Panos Manetos, Alexandros Bartzokas-Tsiompras, Christos Karolemeas, Efthimios Bakogiannis	Optimization of location of pedestrian counting sensors for urban data collection and monitoring of walkability strategies
María Zúñiga Antón	Maps vs COVID-19: Cartography design in Zaragoza city
Rafael de Miguel González, María Sebastián López, Ondrej Kratochvíl	Geographic education for the promotion of spatial citizenship: collaborative mapping for learning about the local environment in a global context.
Javier Álvarez-Otero, Rafael de Miguel González, Ondrej Kratochvíl, María Sebastián López	Participatory Design: an innovative methodology to improve sustainability competencies in the students of Geography in secondary education
Zeynab Ahmadi, Somayeh Khademi, Mostafa Norouzi	The Implications of Pandemic on the Right to Housing: Looking Back and Moving Forward

Session Geospatial technologies

Chair: Michaela Lindner-Fally

Authors	Paper title
Juan Antonio García González	The importance of geotechnologies today
Carina Peter Sandra Sprenger	Digitalization and Geography Education - An Analysis of Curricula
Vasilis Kopsachilis, Nikos Vachtsavanis, Michail Vaitis	A Spatial Knowledge Infrastructure for the Aegean Archipelago
Christos Vonapartis Kosmidis, Nikos Lambrinos	Development of the Online Geospatial Problem-Solving Instrument: Investigating Elementary Students' perceptual processes in geospatial problem-solving.

Session GIS

Chair: Styliani Passadelli Anthoula

Authors	Paper title
Jani Kozina, Rok Ciglič	Use of Geographic Information Systems in Cultural Heritage – Between Education and Practice
Dimitris Kavroudakis	The art of geographical analysis of covid19 related data
José Jesús Reyes Nunez, Krisztina Irás Ágnes Cselik Mónika Varga	Presentation of Hungarian writers and poets using ArcGIS Online

Session Geopolitics and naming (I)

Chair: Gerry O'Reilly

Authors	Paper title
Gerry O'Reilly	Place naming, identities and geography: critical perspectives in a globalizing and standardizing world.
Jussi S. Jauhiainen Taavi Pae	Dis/Appearing Names and Naming of Collective Farms in the Soviet Estonia
Yilmaz Ari	Giving Identity to Space through (Re)Naming: Practice of Village Renaming in The Period of The Republic of Turkey
Tal Yaar-Waisel	The Mystery of Hydronymy in the Land of Israel

Session Geopolitics and naming (II)

Chair: Gerry O'Reilly

Authors	Paper title
Jennifer Ballantine Perera	The Overlaid Past: The Politics of Space and Memory in Gibraltar's 'Doubling' Street Naming Principle.
Jonathan Cherry, Brian Ó Raghallaigh Úna Bhreathnach	Reading Ireland's colonial and postcolonial toponymic landscapes
Marianna Ács, Norbert Pap, Máté Kitanics, Péter Reményi	Geo-history of the toponymy of Mohács plain, SW Hungary

Session Climate change

Chair: Karl Donert

Authors	Paper title
Mary Fargher	Connecting on Climate Change Education - Exploring the role of hierarchical geospatial enquiry through GIS in school geography.
Michael Leuchner, Valerie Wischott, Niel Döscher, Gunnar Ketzler	Heavy precipitation events and their effects on flooding and operations of the fire brigade – case studies from Germany
Eirini Chatzara Apostolia Galani George Arhonditsis Evangelia Mavrikaki	Can climate crisis go viral? A review of climate change communication lessons in the aftermath of the COVID-19 pandemic.
Katherine Dunster	Thought into Action: Applying the SDGs within an undergraduate degree program
Karl Donert	Teaching the future

Session Global Issues

Chair: Rafael de Miguel González

Authors	Paper title
David Kaplan	American Ethnonationalism in a Global Context
Philip Fayad Phaedon Kyriakidis,	The geography of Covid-19 spread in Cyprus at district level: a spatiotemporal analysis of the outbreak and the vaccination strategy followed
Charalampos Tsavdaroglou	Post-democratic governance in refugee camps and the newcomers' right to the city in Athens and Thessaloniki

Session Social Geography and spatial inequalities

Chair: Harry Rogge

Authors	Paper title
Ailish Craig, C. Hutton J. Sheffield	Spatial variations of social capital typologies and sustainable development in Malawi
Aurore Lecomte	What contributions to the teaching of spatial inequalities? The example of Travellers
Simangele Dlamini Gina Weir-Smith	Spatially characterising the (non)attainment of Sustainable Development Goal 1(no-poverty) in light of Covid-19 in South Africa

Session Risk reduction education

Chair: Harry Rogge

Authors	Paper title
Konstantina Bentana Nickolas Zouros Ilias Valiakos	UNESCO Global Geoparks and Disaster Risk Reduction Education for school students: The educational programme of Lesvos Island UNESCO Global Geopark
Aikaterini Klonari Styliani Passadelli Anthoula	Disaster Risk Reduction Education in Greece's School Geography
Nickolas Zouros	Field Educational activities on geohazard risk reduction in Lesvos UNESCO global geopark
Aikaterini Klonari Dimitrios Karatsolis	Examining natural disaster literacy levels of greek secondary school teachers

Session Environment

Chair: Gert Ruepert

Authors	Paper title
Andreea Nita Laurentiu Rozylowicz	Public awareness and engagement in Environmental Impact Assessment (EIA) procedure during COVID-19 pandemic
Ales Smrekar Katarina Polajnar Horvat	How to preserve wetlands through a participatory process? (Case study from the Slovenian coast)
Katarina Polajnar Horvat Aleš Smrekar	"Wetland Memorandum" as a tool for successful wetland governance

Session Geospatial thinking

Chair: Styliani Passadelli Anthoula and Aikaterini Klonari

Authors	Paper title
Christina Zisi, Aikaterini Klonari Nikolaos Lambrinos	Large-scale giant maps. Are they powerful tools for developing spatial abilities in kindergarten pupils?
Vlachou Vlachopoulou Pavrides Spyridon Aikaterini Klonari, Chatzipetros Alexandros,	Educational Research on Greek Students' Geospatial Thinking
Styliani Passadelli Anthoula Aikaterini Klonari	Teacher's perceptions influence the development of students with dyslexia geospatial abilities?
Ourania Rizou Aikaterini Klonari Dimitrios Kavroudakis	ICT-based teaching scenario about "Population distribution in Greece": A case study

Session International cooperation in Geography education

Chair: Tal Yaar-Waisel

Authors	Paper title
Gerry O'Reilly Tal Yaar-Waisel	Small but Smart: International Shared Virtual Class Link-up During the Pandemic 2020-2021 - Third-Level Students in Ireland and Israel
Israel Ben-Dor Sonja Danner	A story of a passport: Teaching the Holocaust with primary sources, in Austria and in Israel
Caroline Leininger-Frézal Sandra Sprenger	Education for sustainable water consumption in multinational collaboration teachers training: Goals and Challenges
Eyüp Artvinli Leyla Dönmez Niyazi Kaya	Using Project-Based Learning in the Development of Geography Projects: An Experimental Study for Social Studies Teacher Candidates

Session Geography education

Chair: Daniela Schmeinck

Authors	Paper title
Neli Heidari Markus Feser Nina Scholten Knut Schwippert Sandra Sprenger	Research on Language in Primary and Secondary Geography Education: A Systematic Literature Review of empirical Geography Education Research
Don MacKeen	Planting a seed: Sustainable education for students with Additional Support Needs
Doug Specht	Embedding Ethics in Geography: An examination of bringing geospatial ethical frameworks into the classroom.
Cédric Naudet	Using "Spontaneous Geography" to Reason About Environmental Problems
Danuta Piróg	Real demand for geography teachers in Poland: analysis of online job adverts in the years 2019-2020
Uwe Krause	Higher Order Thinking by Setting and Debriefing Tasks in Geography Lessons

Session Geography education for sustainable development

Chair: Maria Luisa de Lázaro Torres

Authors	Paper title
Nelli Yakunina	SDGs in Geography Teaching: examples of application to secondary school curriculum in Spain
Daniela Schmeinck	Ride and smile: geographical education in primary school for sustainable development
Theodora Drăgan Gabriela Adina Moroşanu	Developing sustainability through environmental education - Proposal for a field itinerary in Romanian Carpathian Mountains
Duncan Hawley	Encountering carbon in the everyday world: using novel contexts and teaching that shifts beyond the obvious targets.
María Luisa de Lázaro Torres Javier Álvarez-Otero Miguel Ángel Puertas-Águilar	Assessing media coverage of the EU's clean energy strategy to train teachers
Nikolaos Voudrislis	Geography Education for Sustainable Development and Global Citizenship Education
Przemysław Charzyński Marcin Świtoniak, Magdalena Urbańska	Soil for you, soil for me, soil for us. Pedosphere aspects of geographical education from sustainable development perspective.

Session Landscape

Chair: Luc Zwartjes

Authors	Paper title
Anna Steluta Manolache Teodora Sin Mihai Pop Marissa Dyck Viorel Popescu	Disentangling trophic relationships among carnivore species in Eastern Carpathian landscapes
Ashvin Wickramasooriya	Analysis of potential reforestation areas using geospatial technology
Eleni Damopoulou	Changing “soundscapes” transforming local spatial perceptions. -The case of Ellopia-
Luc Zwartjes Christos Polykretis Dimitris Alexakis Karl Donert Rafael de Miguel González	GEOLAND: Digital Educational Geoinformatic Methodologies for Monitoring Landscape

Session Rural Geography

Chair: Thanasis Kizos

Authors	Paper title
Stefanos Plastras Sofia Polymeni Dimitrios N. Skoutas Charalabos Skianis Georgios Kormentzas	The Development of a Distributed Monitoring System For Precision Agriculture In The Northern Aegean Islands: The AGRICA II Project
Michalaki Afroditi Karantonis C. Haralabos	Valorization of vine raw materials from North Aegean - The case of functional food ingredients
Spyros Didos Maria Kyritsi Foteini Trikka Sofia Michailidou	Multi-omics applications in food products with geographic indication: the case of Greek dairy products
Giorgos Katsikogiannis Giorgos Stavrianakis Dimitris Kavroudakis Thanasis Kizos	Pest management with precision farming tools: the case of the olive fly (<i>Bactrocera Oleae</i>),
Thanasis Kizos	Farm level management of input/outputs with precision farming tools and biodiversity impacts: evidence from mixed Mediterranean crops and livestock systems
Bahar Kaba, Ikay südaş	Young Urbanites' Seeking for an Alternative Life in The Turkish Aegean Countryside

Session Cultural Geography and Heritage

Chair: Maria Pigaki

Authors	Paper title
Carmen García Irene Sánchez Juan Antonio García	Challenges for teaching Cultural Heritage in Higher Education: spatial dimension and methodological approaches
Maria Pigaki Margherita Azzari Carmen García L.Spini Giorgio Barbato Pierre Mazagol E. Sempou	Cultural heritage studies as an applied transdisciplinary science through the integration of Geosciences. The MINERVA Project
George Lampropoulos George Panagiotopoulos,	Mapping Ancient Athens: A Digital Map to Rescue Excavations

Authors	Paper title
Apostolia Galani Elena Mantzari Monica Gavrielidou Maria Fountana Spiros Papadopoulos Aristides Vagelatos	"Escape through Culture": Develop escape games based on site-related literary texts to reach the "missing" visitors of cultural sites in the era of pandemic
Margherita Azzari P. Deguy L. Dolfi V. Bologna C. Pappalardo C. Berti	Training on the method of data acquisition, analysis, and visualization in the field of cultural heritage: a Tuscan case study

Session GI Pedagogies

Chair: Michaela Lindner-Fally

Authors	Paper title
Sophie Wilson, Luc Zwartjes Michaela Lindner-Fally	GI Pedagogy: An innovative model using geoinformation for teaching about sustainability
Kimberley Hindmarsh Alexandra Budke	The effect of an open educational resource (OER) on student teachers' abilities to diagnose students' written argumentation skills
Tijana Ilic Tanja Urbančič Veronika Dolar Anja Polajnar	Open Education as a support to Sustainable Development Goals

Sessions by author

Family name	First name	Session Name
Alvarez Otero	Javier	Urban geography - postpandemic
Ari	Yilmaz	Geopolitics and naming (I)
Artvinli	Eyüp	International cooperation in geography education
Aurore	Lecomte	Social geography and spatial inequalities
Azzari	Margherita	Cultural geography and heritage
Ballantine Perera	Jennifer	Geopolitics and naming (II)
Ben Dor	Israel	International cooperation in geography education
Bentana	Konstantina	Risk reduction education
Charzynski	Przemyslaw	Geography education for sustainable development
Chatzara	Eirini	Climate change
Cherry	Jonathan	Geopolitics and naming (II)
Craig	Ailish	Social geography and spatial inequalities
Damopoulou	Eleni	Landscape
Danner	Sonja	International cooperation in geography education
de Lázaro Torres	María Luisa	Geography education for sustainable development
de Miguel González	Rafael	Urban geography - postpandemic
Didos	Spyros	Rural geography
Dilini	Mmgs	Rural geography
Dlamini	Simangele	Social geography and spatial inequalities
Donert	Karl	Climate change
Drăgan	Theodora	Geography education for sustainable development
Dunster	Katherine	Climate change
Fargher	Mary	Climate change
Fayad	Philip	Global issues
Galani	Apostolia	Cultural geography and heritage
Gallardo	Marta	V-Global

Family name	First name	Session Name
García Martínez	Carmen	Cultural geography and heritage
García-González	Juan Antonio	Geospatial technologies
Hawley	Duncan	Geography education for sustainable development
Heidari	Neli	Geography education
Hindmarsh	Kimberley	GI Pedagogies
Ilic	Tijana	GIS
Jauhiainen	Jussi	Geopolitics and naming (I)
Kaba	Bahar	Rural geography
Kaplan	David	Global issues
Karantonis	Charalampos	Rural geography
Kavroudakis	Dimitris	GIS
Kizos	Thanasis	Rural geography
Kizos	Thanasis	Rural geography
Klonari	Aikaterini	Risk reduction education
Kosmidis	Christos	Geospatial technologies
Kozina	Jani	GIS
Kratochvil	Ondrej	Urban geography - postpandemic
Krause	Uwe	Geography education
Lampropoulos	George	Cultural geography and heritage
Leininger	Caroline	V-Global
Leuchner	Michael	Climate change
MacKeen	Don	Geography education
Manetos	Panagiotis	Urban geography - postpandemic
Manolache	Anna Steluta	Landscape
Michalik	Kerstin	V-Global
Naudet	Cédric	Geography education
Nita	Andreea	Environment
O'Reilly	Gerry	Geopolitics and naming (I)
O'Reilly	Gerry	International cooperation in geography education

Family name	First name	Session Name
Pap	Norbert	Geopolitics and naming (II)
Passadelli	Styliani	Risk reduction education
Passadelli	Styliani	Geospatial Thinking
Peter	Carina	Geospatial technologies
Pigaki	Maria	Cultural geography and heritage
Piróg	Danuta	Geography education
Plastras	Stefanos	Rural geography
Polajnar Horvat	Katarina	Environment
Pons Izquierdo	Juan José	V-Global
Reyes Nunez	José Jesús	GIS
Rizou	Ourania	Geospatial Thinking
Rodriguez Domenech	Maria Angeles	V-Global
Sánchez Ondoño	Irene	Cultural geography and heritage
Schmeinck	Daniela	Geography education for sustainable development
Sebastián López	María	Urban geography - postpandemic
Smrekar	Ales	Environment
Specht	Doug	Geography education
Sprenger	Sandra	V-Global
Südaş	İlkay	Rural geography
Tsavdaroglou	Charalampos	Global issues
Vaitis	Michail	Geospatial technologies
Valiakos	Ilias	Risk reduction education
Vlachou	Aggeliki	Geospatial Thinking
Voudrislis	Nikolaos	Geography education for sustainable development
Wickramasooriya	Ashvin	Landscape
Wilson	Sophie	GI Pedagogies
Wolff-Seidel	Sebastian	GI Pedagogies
Yaar-Waisel	Tal	Geopolitics and naming (I)
Yaar-Waisel	Tal	International cooperation in geography education

Family name	First name	Session Name
Yakunina	Nelli	Geography education for sustainable development
Zisi	Christina	Geospatial Thinking
Zouros	Nickolas	Risk reduction education
Zúñiga Antón	Maria	Urban geography - postpandemic
Zwartjes	Luc	Landscape

Workshops

Workshop 1. How to improve SDG14 through participative governance in Mediterranean territories? (Auditorium)

Pauline Malterre

Abstract

Despite Marine Protected Areas are considered as a powerful tool for biodiversity conservation, there is an urgent need to improve their effectiveness. Over the last decades, regional and international agreements have strongly emphasized the need to achieve effective management of MPAs through participatory approaches.

The TUNE UP project is an INTERREG Mediterranean project which aims to improve MPA management through the development and implementation of a multi-stakeholders governance tool, the Environmental Contract.

Territorial laboratories have been organized to provide stakeholders with the opportunity to be heard on MPA issues and to actively participate in its planning and management. After collecting their opinion on the issues the territory and its MPA were facing, they have been invited to define its evolution based on 3 scenarios : the trend one, which is basically the one currently implemented, the orientated one, where everything is possible, and finally the preferred one which combines expectations and reality in terms of feasibility. Based on this consensual scenario, a shared and common vision has sometimes succeeded in being declined in an operational actions plan, and managed to be formalized by the signing of Memorandum of Understanding/Cooperation between parties, seen as the premises of the Environmental contracts. 10 local MoUs have thus been signed between stakeholders of the pilot MPAs who committed themselves in the process.

To guarantee the promotion of the TUNE UP experience and results, and a widespread dissemination of the governance process advocated for, several tools have been developed:

- a summer school,
- a wikisource on coastal best practices,
- an e-learning module,
- a Regional Policy toolkit that provides the technical, financial and legal keys for developing Environmental contract
- capacity-building seminars for transferring the methodology to regional and/or national authorities which are responsible for designing, setting and managing MPAs, and managers of other MPAs that haven't been targeted yet by TUNE UP.

By the end of the capacity-building process, stakeholders at regional level should commit themselves in implementing Environmental contracts through the signature of Regional MoUs. Around 30 other Mediterranean MPAs are expected to get the facility to launch this governance approach.

Workshop 2. A sustainable fieldwork based on an itinerary in Athens. (Room 1)

Caroline Leininger-Frézal, Sandra Sprenger, Maria Luisa De Lazaro Torres, Maria Pigaki, María Angeles Rodríguez Domenech and Karl Donnert

Abstract

Online resources have grown in importance during the COVID pandemic. In this context, digital story maps (DSM) tools can be very useful for teaching and learning aims. They integrate information and data in different formats such as text, images, videos, podcasts, tables or maps using popups on the web maps. This innovative way of design and visualization can be used, for example, for creating virtual fieldtrips, after or before a real fieldtrip. In this sense, direct fieldwork observation can be applied for learning different landscapes and sustainable learning aims, being an easy way to highlight content to learn. We show different examples of virtual field trips that can be used for teaching and learning sustainable topics; We will accompany the participants in the creation of their own virtual tour based on data collected in Athens. We have chosen the friendly tool ArcGIS StoryMaps (ESRI) as it is linked to ArcGIS Online, Survey123 and ArcGIS Pro, offering us a better management of layers and an enrichment of the produced maps.

Workshop 3. Migration: "Even After Death" and "Along The Way" (Room 2)

Harry Rogge, Michaela Lindner-Fally, Douglas Herman, Sonia Nandzik, Henk van Houtum

Abstract

How to represent and give presence to refugees? Following the documentary 'Even After Death' of refocus media labs (featured in the conference program) and the "(self-)harming EU borders" keynote of Henk van Houtum, this workshop will focus on the idea how to jointly develop an emancipating vocabulary (language, visually, cartographical) for refugees. We will study the dominant idiom that is used in media, by the EU and the Council of Europe on refugees and migration and discuss alternatives. In Language: How do we/you (re)present refugees other than in anonymous numbers (statistics)? How do you (re-)present refugees other than in "water" language (current, tsunami), "animal" language (hordes, cockroaches) or "war" language (invasion). In Movies/photos: How do we/you (re-)present refugees in moving images/photography other than people crawling through fences or people on packed boats? In Maps: How do we/you (re-)present refugees other than arrows on maps?

Workshop 4. Field Studies (Room 3)

Joseph Kerski

Abstract

Connecting field studies with Survey123 to dashboards and story maps to communicate the results of the field studies

Workshop 5. GREEN HE study practices (Room 4)

Kaja Cunk

Abstract

The ability of the education system to adapt to new social and technological developments is of great importance. Two key areas of innovation in higher education are the introduction of learning through challenges and interdisciplinary research-based learning (OECD, 2018). Problem-based and interdisciplinary learning approaches facilitate metacognitive skill development, by emphasizing the importance of critical thinking, flexibility, innovativeness and soft skills.

An apprenticeship model NURTURING THE WORLD was developed and tested by project partner (PiNA) in the Social Innovators project, one of 24 projects, funded by Iceland, Liechtenstein and Norway through the EEA and Norway Grants Fund for Youth Employment. It was based on learning through challenges and interdisciplinary research-based learning. . The model was a base for joint collaboration of three HEIs and three CSOs to develop GREEN study practices. Workshop will be a step-by-step presentation of the collaborative effort by those organisations and institutions. It will present how practices will contribute to a student-centred curriculum and join all three relevant actors – students, commercial and non-commercial organisations in the private sector and HE institutions and prevent potential mismatches in skills and expectations.

Posters

Title: 7th grade students' knowledge and views about terraced landscape: A pilot study

Chara Chrysanthaki, Aikaterini Klonari Aikaterini, Theodora Petanidou

The aim of this research is to investigate lower secondary students knowledge, points of views and attitudes about the cultivation terraces, their importance and contribution to sustainable development. The rationale for this study was the lack of greek students' landscape education and their minimal involvement in formal education on issues related to the terraced landscape and its cultural, aesthetic, environmental and economic value (Klonari et al, 2011; Siama et al, 2017; 2018). Cultivation terraces constitute the most significant large-scale human intervention on greek mountainous areas and Aegean islands. Such infrastructure investment, has proven to be the most effective land management tool, because made production process viable and sustainable over time and contributed to the ability of natural ecosystems to adapt to climatic and environmental vicissitudes (Petanidou, 2011; 2015). The sample of this pilot study (convenience sample) were 26 7th grade students (14 boys and 12 girls) of a Lower Secondary School on Leros island. The research tools were: a questionnaire (pre- and post-) (Cohen, et al, 2017), the intervention, based on the method of project (Buck Institute for Education, 2003) the educational material (created to implement in this intervention), a rubric for students self - evaluation and teacher's observation sheets. The educational material included an electronic game for the terraces of the Aegean, named: "I construct terraces". The students had detailed instructions for the game, as well as for the construction of a 3D model of terraces. The duration of the project was one year. The findings of the research were not all very positive, due to the distance education (because of covid-19) last year. The difficulties that students faced were mainly those that related to misconceptions about sustainability and following the instructions for the construction of the 3D model. However, there have been positive results regarding attitudes and knowledge about the value of terraces for agriculture. In addition, the findings of the pilot research were very useful, as we used them to make corrections to research educational material and to improve the intervention, which the researcher will apply next year to a larger sample and in a face- to- face education.

Title: A theory-driven typology and narratives for potentially conflicting land use decisions

Pavel Raška, Bohumil Frantál, Stanislav Martinát, Vladan Hruška, Martin Dolejš

In the last four decades, around one third of globally available arable land has been irreversibly transformed into other uses, and in the European Union, more than 1,000 km² of agricultural or natural land disappears every year as it is converted into built-up areas and other artificial surfaces. With such growing pressure on land, conflicting societal expectations about land use increasingly result in local land use conflicts (LUCs; von der Dunk et al. 2011), which are often exacerbated by poorly integrated policies and materialize in specific planning decisions. In this poster, we present the novel theory-driven dynamic typology of potentially conflicting planning decisions (Raška et al. 2022), and we show, how complex open-ended local land use conflicts evolve by lining-up these decisions in sequences. The applicability and limitations of the proposed typology for understanding and managing local land use conflicts is then narrated with microstories from Central Europe, relating to urban regeneration in floodplains and renewable energy projects in agricultural landscapes.

Title: Applying GIS to assess population access to health facilities in the Republic of Kosovo

Ferim Gashi, Idriz Shala, Egzona Graiçevci

In December 2019, authorities in China discovered a whole new virus. Since then, this virus has been spread out in the world thus leading to pandemic. The virus has since then been called SARS-CoV-2, which contributes to infection with Covid-19. The actual situation (November 2021) of the Covid-19 pandemic, has reached a number as high as 260 million cases globally, 5 million deaths and a world instability in relation to a further impact of the future. The citizens of the Republic of Kosovo have faced a vast number of health problems. Hence, the aim of this paper is to analyse the percentage of the population and its access to health facilities, as well as the distance in relation to health facilities. In this study, Geographic Information Systems (GIS) is used to assess the access of population to health facilities in Kosovo including groups of spatial data, i.e infrastructure. During the analysis an extraction of health facilities covering the territory of the Republic of Kosovo will be done. This will be done by respecting the distance or certain standards according to the technical norms of spatial planning. The success of the health sector is vital for the development of social, cultural and economic sectors of a country. This study is useful for planners and health policy makers.

Title: ARSx2 - An innovative unmanned aerial platform to monitor the marine environment and tackle emerging phenomena in maritime transport

Papakonstantinou Apostolos, Argyrios Moustakas, George Harvalis, Evangelos Christodoulou, Konstantinos Topouzelis

From the ancient times, sea transportation place a significant role in the economic growth of coastal areas as it is the most economical and reliable way of transporting. Land geography, shipping, and maritime transport play a decisive role in this direction. Nowadays, one of the most significant dangers of merchant shipping on the seas, except for extreme weather phenomena, is the piracy of the seas. This phenomenon results from social, political, and economic instabilities in different countries, especially in Africa's coastal zone. The economic consequences for the shipping community are significant, so taking preventing measures and tackling piracy is essential. Therefore, to confront the problem, it is necessary to use new technologies such as Unmanned Aircraft Surveillance Systems (UAS). These systems will emerge with new, innovative ways to deal more effectively with the geographic extent where the piracy phenomenon appears in sea transportation. More specifically, the ARSx2 (AeRial System and Anti piRacy System) project enables innovative unmanned systems and ways to assist merchant ships in dealing more effectively with the phenomenon of piracy in various geographic areas extends when deployed in the maritime environment. ARSx2 deals with the development of a unique and innovative maritime surveillance system consisting of two UAVs for i) the prevention of piracy or other illegal activities, ii) the monitoring of pirate incidents in progress, as well as iii) search and rescue cases at sea. Furthermore, the ARS project results will benefit the security of the movement of humans and goods as it offers a more accessible, faster, safer, more accurate, and cost-effective means to guard merchant ships against piracy attacks. Additionally, the project results contribute significantly to the research in geoinformatics and remote sensing, leading to innovative products-platforms for collecting geospatial data for monitoring the marine environment.

Title: Biographical Map Library of European Authors

De Lázaro-Torres, M.L.; Buzo Sánchez, I., (Coord). Álvarez-Otero, J.; Barra Martínez, J.A.; Carrapato, C.; Cruz, V.; Cselik, A.E.; De Miguel González, R.; Domínguez Molano, A.; Escudeiro, N.; Fernández Portela, J.; Fortuna Martín, M.I.; García Ferrero, A.; Irás, K.; Kiss, D.; Mineiro, J.P.; Lambert, M.F.; Morales Yago, F.J.; Pons Izquierdo, J.J.; Puertas-Aguilar, M.A.; Pulido Cuadrado, J.A.; Reyes Nunez, J.J.; Tena García, M.; Tienza Sánchez, E.; Varga, M.; Vega Fernández, C.; Yakunina Tretiakova, N.

Raising awareness about the social value of literature as part of European cultural heritage is the main aim of the BIOMAPS project. BIOMAPS relies on the StoryMaps (ESRI), an innovative and attractive tool that is easy to manage, and visualize routes and places that have shaped the life and literary work of famous authors. The authors selected are important in classical literature or are living authors from Spain, Hungary and Portugal, the countries of the project partners. The project

highlights a novel, attractive and inspiring way to value literary heritage and the biographies of its authors, inviting experiential learning that is expected to both improve students' interest in literature and academic results. Secondary school students collaborating on the project are developing linguistic communication competences in Spanish, as a main or secondary language. They are also improving cultural awareness while creating literary routes on digital cartography and in real fieldtrips. More information about the project can be found at: biomaps.eu

Title: Geography fieldwork using mobile phones in secondary education

Horký Štěpán

Fieldwork is a form of teaching that gives students an opportunity to study outside of the classroom and is considered one of the most valuable teaching methods in geography education (Lee, 2020). Enhancing support for fieldwork is m-learning – a teaching method which uses mobile devices and gives students opportunities like learning anytime and anywhere, using applications and many others (France et al., 2015). M-learning and fieldwork are making a powerful couple in geography education. Students can use their phones during a fieldwork to collect data using applications such as sound-level meter, camera, GPS, or geotagging apps (Lee, 2020). I conducted research to create a fieldwork using mobile phones and to evaluate usability of smartphone in geography fieldwork. To fulfill the aim, I created a fieldwork lesson for 18 secondary school pupils. Chosen research methods were observation to see how pupils worked with phones, how they reacted and handled unexpected problems. An interview to find out what pupils thought about fieldwork and m-learning and an analysis of the pupil's outcomes to see how successful their work was. The results indicate that the usability of smartphones in geography fieldwork is highly accepted, and that smartphones have huge potential in geography education. Pupils were able to work with their devices successfully, there were only problems with some technical issues, such as low battery or non-updated operating system. Analysis of their outcomes shows that mobile phones helped them fulfill their tasks at a high level. During interviews, pupils were asked about m-learning and fieldwork. More than half of them are not allowed to use their phones during their lessons. None of them have ever experienced fieldwork similar to this one, even though they enjoyed working with phones. They highlighted working with GPS, maps, and the internet.

Title: GIS and geographical inquiry approach in teaching: a design of research

Vendula Mašterová

The inclusion of geographic information systems in teaching has been the work of research since the end of the 1990s, but it cannot be said that it has been successfully implemented into the environment of Czech schools. Due to changes in the national curriculum, which place greater emphasis on the development of

digital competences (MŠMT, 2020), it is appropriate to include geospatial technologies in geography teaching. Based on previous researches, geographical inquiry in which the pupil is the main participant in education appears to be an appropriate teaching method for the inclusion of technologies in geography education. However, researches do not cover a motivation of teachers and holistic view of education, as well as what can happen and what situations occur in the classroom. The aim of this paper is to present a design of future research, which is going to focus on teachers who will use teaching with GIS and inquiry approach. There will be several research tools, as different data collection techniques will be combined. Situational analysis will be used for data analysis, which is appropriate if we want to explore a comprehensive view of a teaching of a teacher. This method makes it possible to capture both unique and partial elements that have not been considered in previous research to investigate the main phenomenon (Clarke, 2015). This method is going to be explained on the results of a pilot study.

Title: How spatial technologies and open data can assist in monitoring the Sustainable Development Goal 11 on the local scale?

Anastasia Kakouri, Eleni Athanasopoulou, Orestis Speyer, Evangelos Gerasopoulos

Resilience and sustainable urbanization relate strongly to Goal 11 “Make cities and human settlements inclusive, safe, resilient and sustainable” of the Agenda 2030 frame of Sustainable Development Goals, where air quality and consequent health considerations are explicitly addressed. As we are officially in the UN Decade of Action, the untapped potential of EO and geospatial information is here exploited to respond to the increasing calls for localizing the SDGs. In recognition of the above, this study focuses on monitoring the SDG Indicator 11.6.2, on the local, rather than national, level. In particular, the mean annual concentration of fine suspended particles of less than 2.5 microns in diameters (PM_{2.5}) is calculated as a population-weighted average for the Local Administrative Units (LAU, Level 2) of Greece. The indicator is here monitored for a 3-year period (2014–2016), where PM_{2.5} values ($\mu\text{g m}^{-3}$) correspond to the CAMS Regional Air Quality Ensemble Reanalysis validated dataset of Copernicus, with a spatial resolution of $0.1^\circ \times 0.1^\circ$. The regional air quality product of the CAMS is based on an ensemble of 9 air quality models developed across Europe. Their outputs are validated, using in-situ data rigorously validated according to the air quality reporting principles set in EU (CAMS, 2020). The spatial distribution of population per LAU is given by the combination of the Joint Research Centre’s (JRC) Global Human Settlement Layer products (2015) and the latest available version from Eurostat’s Local Administrative Units data (2020). The whole process is fully automated and relies solely on open and free data, thus replicable for any country in Europe. It will be delivered as an interactive, user-friendly, online platform to monitor SDG 11.6.2 on the urban scale, allowing for identification of hot-spots that necessitate increased policy attention.

Title: Mapping Aegean Sea using the ARGO unmanned surface platform and innovative web-based geoservices

Papakonstantinou Apostolos, Argyrios Moustakas, Panagiotis Zervos, Dimitrios Stefanakis, Manolis Tsapakis, Mairi Paspaliari, Christos Kontos, Antonis Legakis, Konstantinos Topouzelis

For years mobile robots are used as valuable tools in industry research and education. The rapid development, the costs reduction, and the miniaturization of sensors that can be attached to Unmanned Aerial Vehicles (UAV) and ground-based mobile vehicles in recent years allowed researchers to utilize them as an affordable platform for data acquisition. Despite recent developments in the area of ground and airborne unmanned vehicles, a small number of Unmanned Surface Vehicle (USV) platforms are targeted for mapping and monitoring environmental parameters for both research and industry purposes. The aim of this research project is to present the development of an open-design USV drone with integrated multi-level control hardware architecture and state-of-the-art sensors and payloads for the autonomous monitoring of environmental parameters for large geographical extends of sea areas. The proposed catamaran-type water surface drone enables direct control over a wireless radio link, separate integration of the optimal propulsion control, navigation, and communication with the ground-based control station. The design is highly modular, where each component can be replaced or modified according to desired task, payload, or environmental conditions and is capable to sail in the Aegean Sea. The developed USV is planned to be utilized as a system for data acquisition, mapping and monitoring the bathymetry, as well as various environmental parameters, from small ports to large sea geographical extends. The system presents innovations in the following areas i) the on-board / real-time data processing/analysis capabilities, ii) the energy-independent and environmentally friendly platform entirely made using the latest aeronautical and marine materials, iii) the integration of advanced technology sensors all in one system (Photogrammetric and radiometric footprint, as well as its connection with various environmental and inertial sensors) and iv) the information management application. This application is the greatest innovation of the system, as, for the first time, it introduces and imprints spatially the environmental variables and indices recorded allowing users to remotely access all the raw and processed information using the implemented web-based GIS application.

Title: Medium Sized Cities and Their Urban Areas: Challenges and Opportunities in the New Urban Agenda. Study Case in Ciudad Real (Spain)

María Ángeles Rodríguez Domenech

From the beginning of the implementation of Agenda 2030 the focus has been placed on the analysis of the roles of medium-sized cities beyond Goals 11, recognizing its significance for the attainment of the goals set. From different organizations it has been repeated that the battle for sustainable development will take place in cities, due to the fact that it is where the citizens are concentrated and where 80% of available resources are already consumed and more than 70% of global emissions are produced. The aim of this study is to identify relatively recent dynamics and the most sustainable processes of change and urban strategies. The study case will be in Ciudad Real (Castilla-La Mancha region). It is district presented as the pioneer region in Spain to take action to confront the demographic challenge in depopulation, approving on 12th May of 2021 in the Law on Economic, social and tax measures against depopulation and rural development in the region.

Title: Strategies of reading maps – possibilities of research methods

Nikola Koktavá

The development of technology and new methods of data collection provide us with information about how one thinks when working with a map. These cognitive processes can be called strategies. Map reading strategies are a multidisciplinary process that includes pedagogy, psychology and didactics. Why deal with map reading strategies? The answer may be that it is useful to know the strategies that lead the individual to the right solution, but also the strategies that lead him to the wrong solution. Knowledge of strategies can help improve teaching and focus on learning to read maps better. Through an overview of scientific articles published in the main bibliographic databases, the data collection methods used for research into map reading strategies, the metrics used in them and the basic strategies were identified.

Title: Study ore potential zones using Remote Sensing case of study walka region, Georgia

David Bluashvili, Giorgi Mindiashvili

As it is known, in the last few years, developed countries have successfully used remote sensing to determine the structures and search for minerals. In general, remote sensing data collection and interpretation of high-tech production-gene methods without physical contact with the object. Now all of Earth's remote sensing methods are used by science. It is mainly used in the structures of Geology and Earth Resources testing. Khachkovi area is covered by forests and is characterized by cloudiness. Therefore, all selected from the best of satellite ASTER image data, which are the most well-represented areas and in areas where the forest cover and the minimum was cloudiness. Satellite data from the date of

15.06.2007 (Figure 1) This research includes the rivers Khachkovi, Gumbati, and interpretation of the study area within the contour Kabuli. This data was obtained using remote sensing analysis and the technique, by which the geological structures and the possible hydrothermally altered zones are identified. As a result of conducted research work by us, using Remote Sensing method, there were discovered still unknown mineralized zones on the Khachkovi ore-occurrence. Where were established new gold-bearing areas by spectrometric, principal component analyses, and international standards of mathematical models. The results of the survey were checked on the place and it coincided with the previous researcher's data.

Title: Council of Europe and European Union compared. What do you know, what can you tell?

Harry Rogge

End of February 2022 Russia was expelled from the Council of Europe. It was a unanimous decision from all remaining 46 member states. Since 1949 the Council of Europe is the largest supranational political organization in Europe. The binding three themes around which the representatives from all parliaments confer are: Human Rights – Rule of Law – Democracy. The Council of Europe is THE body for reconciliation on the most basic and human factors of civil society. Do you know the governing bodies? Committee of Ministers– Parliamentary Assembly – Congress of Local and Regional Authorities – European Court of Human Rights – Commissioner for Human Rights – Conference of INGOS. The Council of Europe resides in Strasbourg. A complete other organization is the European Union. Since Brexit the European Union now consists of 27 member states. Since January 2021 the United Kingdom officially left this other European supranational body. In contrast to the Council of Europe 27 commissioners and a direct chosen parliament the European Union develops policies on almost every aspect of our daily life. Only Military Defense and National Taxation are fields not covered by the European Union. The European Union resides alternately in Brussels and Strasbourg. The Council of Europe and the European Union share the same flag, anthem and other symbols! Getting to know and learn more about the Council of Europe and the European Union will enhance a better understanding of the values and achievements of the European Dimension. Address ignorance and Euroscepticism!

NOTE: This poster shows the most recent map of the Council of Europe as of end of February 2022. Do you know why Belarus is not a member of the Council of Europe? Google or ask Harry ;-)

Paper abstracts

Session V–Global

Goals, resources and proposals for university teachers in the face of the new global challenges

Maria Angeles Rodriguez Domenech, University Castilla La Mancha

In its 2030 Agenda for Sustainable Development, the United Nations outlined a series of sustainable goals for the next 15 years. One of the main priorities of the United Nations and other international organisations is to encourage the sustainable economic, social, and environmental development of all countries worldwide. Education plays a crucial role in these efforts, as it allows individuals to become more knowledgeable about matters of public interest, while potentially improving their life skills. Challenges, resources and teaching proposals, in the face of new global challenges. This contribution examines aspects related to educating to promote sustainability and SDGs through Geography, which implies a great change within the field of education which affects curricular renewal, methodological change, and the growing integration of technology into the world of geographical education.

Source:

Rodriguez–Domenech, M.A. (2021). Citizenship, Sustainability and Geographic Innovation. Faced with the educational challenges of society. We propose project!. International Conference EUROGEO. Sustainable Development Goals For All. 22–23 de abril de 2021. Madrid. UNED and EUROGEO

Virtual field trips on ESD context

Caroline Leininger–Frézal, University of Paris. Sandra Sprenger, University of Hamburg

Field trips are at the heart of learning geography. How to make the spaces accessible for the students in a virtual format? How using virtual field trips in geography education and the classroom? This question will be addressed during the session. A virtual field trip is a learning approach that has three characteristics (Stainfield et al., 2000): (1) Virtual is meant to be a digital alternative to reality. (2) It allows the exploration of space without being on the actual site. (3) It is based on an interactive digital environment. We have developed a design based research which aims to formalize a didactic approach for the use of virtual excursions. We have experimented with the creation and use of virtual excursions in the perspective of an experiential geography (Leininger–Frézal, 2016) in teacher training at our respective universities. We followed the students throughout this experimentation and analyzed their productions.

Digital (and virtual) formats in primary pre-service teacher education – Orientation in space

Kerstin Michalik, University of Hamburg

Presentation of a project which aimed to promote the implementation of digital media as an integrative part of teaching and learning in primary schools in the context of spatial learning in primary education. Teaching units were created for the work with primary children, realized and evaluated. The teaching units concluded the production of maps of the school district with ArcGis, the orientation in the coordinate-system with GPS and the Commander Compass light-App, the production of a coordinate-net on the ground as well as different ways of orientation in space in former times and with Google Earth/Google Maps. Results of the project will be discussed.

Producing story maps for teaching and learning on sustainability at university

Maria Luisa de Lázaro, Marta Gallardo, Francisco José Morales Yago. UNED

Online resources have grown in importance during the COVID pandemic. In this context, digital story map (DSM) tools can be very useful to help meet teaching and learning aims. They integrate information and data in different formats such as text, images, videos, podcasts, tables or maps, using popups on the web maps. This innovative way of design and visualization can be used, for example, to create virtual fieldtrips, before or after a real fieldtrip. In this context, direct fieldwork observation can be applied to learn about different landscapes and sustainable learning aims, making it an easy way to highlight content. We draw on different examples of virtual field trips that can be used for teaching and learning about sustainability. For this task we have chosen the user-friendly tool ArcGIS StoryMaps (ESRI) as it is linked to ArcGIS Online, Survey123 and ArcGIS Pro, and offers us a better management of layers and an enrichment of the produced maps.

Using story maps as a tool for the sustainability: a literature review

Juan José Pons Izquierdo. Universidad de Navarra

Story maps are one of the most common and useful ways of conducting virtual field trips in an educational context. Their use is recent, but is growing rapidly and covers many different fields. One of them is related to environmental sustainability.

Through a review of scientific articles published in the main bibliographic databases (Web of Science and Scopus), the importance of story maps made for this purpose is analysed and their main characteristics are described: approaches, tools used, methodologies, educational levels, etc.

Session Urban geography – post pandemic

Optimization of location of pedestrian counting sensors for urban data collection and monitoring of walkability strategies

Panos Manetos, Alexandros Bartzokas-Tsiompras, Christos Karolemeas, Efthimios Bakogiannis. University of Thessaly

Assessment and monitoring of walkability plans has gained much more attention recently for urban environments globally. Especially for compact and historic cities like Athens (Greece), which are important international tourist destinations, improving walkability is one of the great future challenges. Pedestrian behavior affects many different aspects of urban life such as transportation, economic or social development etc. Therefore, planning, implementing, and monitoring successful walkability strategies, accurate pedestrian data are required to evaluate them successfully. There are several technological solutions to acquire such data, each with different advantages & disadvantages. Nevertheless, where, and how to measure pedestrian traffic is not a straightforward task since the need for significant volumes of accurate data is preconditions for meaning urban analysis. Choosing the right location for real-time counting sensors is not an easy task especially if the number of devices available is limited or it is intended to grow in the future. Therefore, a mixed location-allocation methodology is implemented to evaluate the optimal places to install such devices given the current technology limitations. The proposed methodology is applied for Athens Municipality area (Greece) and the results reveal the best locations for installing counting sensors in a two-step selection process. First to identify the more representative areas and then selecting the accurate optimal location for the sensor. Finally, several future scenarios are created for further expanding the pedestrian sensor network.

Bartzokas-Tsiompras, A., Photis, Y., Tsagkis, P. & Panagiotopoulos, G. 2021. Microscale walkability indicators for fifty-nine European central urban areas: An open-access tabular dataset and a geospatial web-based platform. *Data in Brief*, 36, 107048.

Fonseca, F., Ribeiro, P. J. G., Conticelli, E., Jabbari, M., Papageorgiou, G., Tondelli, S., & Ramos, R. A. R. (2021). Built environment attributes and their influence on walkability. *International Journal of Sustainable Transportation*, 0(0), 1-40. <https://doi.org/10.1080/15568318.2021.1914793>

Maps vs COVID-19: Cartography design in Zaragoza city

María Zúñiga Antón, University of Zaragoza

In the context of health alert due to the COVID-19 pandemic, Geography is offering and developing projects that can be used to improve information management both at management and communication level to society. In this context, this paper details the methodology used in the development of five cartographic series carried out by the GEOT group in collaboration with Zaragoza City Council. At the methodological level, a complete explanation of the variables represented and the definition of the cartographic trajectories used are presented. This paper is mainly a methodological proposal, but includes as results 17 representative maps of the project. By way of conclusions, the importance of geography and of cartography in responding to the main challenges posed by the health alert situation is highlighted: maintenance of well-being, attention to vulnerable groups, promotion of preventive measures and support to the situation of misinformation.

Geographic education for the promotion of spatial citizenship: collaborative mapping for learning about the local environment in a global context.

Rafael de Miguel González, María Sebastián López, Ondrej Kratochvíl. University of Zaragoza

The proposal presented below focuses on the use of digital technology, open data, and essential skills for lifelong learning in school education, as required by the EU. The objective is to address gaps in school curriculums, whereby young people leave compulsory schooling with little to no data literacy.

To this end, this project references the DigComp conceptual model which establishes as one of its key action elements the literacy and empowerment of citizens through the efficient use of open data (<https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>).

Over the last few months, due to the measures taken to combat COVID-19, we have observed a significant gap in digital literacy education in the countries of the European Union. Specially in Spain, the debate about educational renewal and the promotion of critical and democratic thinking through the efficient use of ICT and open data has been reopened. This new situation calls for a transformation in education, through the use of online information, since during these months citizens have consulted more open data and consumed more cartography than ever before. It matters what and above all: where. But are we capable of using this information in a critical and reflective way?

The work presented here aims to provide an affirmative answer to this question, fostering the acquisition of citizenship skills by students, developing strategies that enable them to be active citizens capable of participating fully in their communities and making informed decisions online and throughout their lives. This study has focused primarily on the teaching of geography and social sciences, since through open data students can better and more reliably understand the political, economic, social and cultural complexity of the world.

Specifically, examples of collaborative mapping at different scales present the actions needed to respond to the need to improve digital skills and increase the adoption of digital education methodologies. Through its implementation in the Secondary School Degree, Master's Degree in Teaching and in the Educational Centers involved, the digital literacy of teachers and students has been developed in a comprehensive manner through the use of collaborative mapping. Digital literacy is materialized in the use of Geographic Information Technologies (GIT), in such a way that four competency skills are developed: (i) instrumental; (ii) cognitive-intellectual; (iii) socio-communicational; (iv) axiological and (v) emotional.

The ultimate goal of this proposal is the formation of a digital spatial citizenship capable of facing current challenges, and promoting local changes, with the purpose of making global impacts.

Participatory Design: an innovative methodology to improve sustainability competencies in the students of Geography in secondary education

Javier Álvarez-Otero, Colegio Diocesano Pablo VI. Rafael de Miguel González, Ondrej Kratochvíl, María Sebastián López. University of Zaragoza

Participatory design is an innovative strategy that aims to develop the implementation of design in schools, focusing on the planning and design of public space around schools and the spaces themselves. To do this, students, teachers, local communities and public administration must be involved in the process of designing the different spaces in and around the schools.

The INPAD project is developing different tools to carry out Participatory Design. One of these tools is an open educational platform, which has been tested in secondary schools. More information about the project can be found at: inpad.eu

In this paper, the results of the classroom experience carried out in Secondary Schools in Spain in the area of Geography are presented. In this way, it has been possible to evaluate the indicators of achievement of competencies in sustainability, which UNESCO marks within the framework of the 2030 Agenda.

The Implications of Pandemic on the Right to Housing: Looking Back and Moving Forward

Zeynab Ahmadi, Somayeh Khademi, Mostafa Norouzi, Kharazmi University

The current study attempts to indicate the importance of the right to the housing under the challenges posed by the COVID-19 pandemic in the urban world. In spite of rigid restrictions imposed on the movement of the population like 'Stay Home' in many urban areas, the type of housing has been inappropriate for these residents, particularly, vulnerable groups, and the current lifestyle of urban life, urban mobility, and employment have proven to be unsuitable in many places for such a crisis. On the urban scale, urban planners and designers need to revisit subjects such as housing and mobility in the light of the COVID-19 pandemic and the restrictions that have been brought on citizens' lifestyles, living spaces, and their movement. While citizens have been affected by the restrictions, it must be said that the pressure on vulnerable groups and disadvantaged communities have been more intense. In the case of Mehr housing (the largest affordable housing project in Iran) and other highly congested residential areas, it is generally the developer's demands, not public values. This is where the confrontation and/or interaction between housing and the virus comes into play. What is clear, is that the precarity of the housing market and the uncertainty of many households' finances in Iran prior to the pandemic have left many without the necessary resilience to cope with further income reduction. Consequently, affordable housing with adequate living conditions has become a matter of life and death, which demonstrates why it is essential to prioritize the right to the housing in Iran. What have housing policies done to secure adequate living conditions before and after COVID-19, and what should the policymakers do to help cities achieve a breakthrough in terms of affordable housing?

Session Geospatial technologies

The importance of geotechnologies today

Juan Antonio García González, University Castilla La Mancha

The dissemination and coexistence with geolocated information is increasing and in more and more diverse environments. The network, geolocation and the democratization of devices that can access them anywhere are generating a silent change in the way we relate to and understand the territory. A reflection is presented on the role that the diffusion of the use of geotechnology is having in our society. It is presented through a series of examples that highlight its importance in many areas of everyday life. They range from routine and local phenomena to processes that mark the course of our lives as a society. Concrete and current phenomena that can be followed in real time to intangible processes of intangible heritage.

Geography should broaden its horizons by extending its transversality and its intertwining with society. It should be a contemporary science that is close to the citizen and helps to understand the infinite number of territorially based processes and phenomena that are occurring at a dizzying pace today.

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Digitalization and Geography Education – An Analysis of Curricula

Carina Peter, Philipps-Universität Marburg. Sandra Sprenger, University of Hamburg

Digitalization presents many opportunities, but also challenges for society and the profession. Furthermore, digital technologies have long influenced geography, e.g., GIS, digital mapping, remote sensing. This also entails tasks for the field of education. This presentation discusses how geography teaching can contribute to these opportunities and challenges from a subject- and education-specific perspective. Following the question – Which aspects of subject-specific digitalization are included in the geographical school curricula and frameworks? – we analyzed aspects of subject-specific digitalization and terms associated with digitalization in curricular and framework requirements (n = 57 documents) for different types of schools in every German federal state. We used this to deduce the extent to which the state of subject-specific digitalization is in line with the society's requirements. In addition, insights into why digitalization is critical to geography education were derived.

A Spatial Knowledge Infrastructure for the Aegean Archipelago

Vasilis Kopsachilis, Nikos Vachtsavanis, Michail Vaitis, University of the Aegean

The provision of high-quality open data to professionals and to the public has been recognized as an important factor for promoting, among others, transparency and democratic control, social participation and self-empowerment, innovation and economic growth, and environmental protection [1]. The international geospatial data community and related organizations, such as the Open Geospatial Consortium (OGC), has a solid and recognized tradition for promoting geographic data sharing. To this end, since '90s technical standards for data interoperability and data dissemination information systems have been developed, such as Spatial Data Infrastructures (SDI) [2]. The University of the Aegean, Greece, aligned with the international practices, has also a solid tradition in the development and operation of SDIs for providing high scale spatial data, mainly related to the Aegean Archipelago. Later technological advances in the field of semantic web and linked data aim to enrich data with semantic interpretation that enables the development of an interconnected web of data understandable and processable by humans as well as by software [3]. The benefits of such development include increased interoperability among data from different providers, easier data integration from multiple sources, advanced querying capabilities and possibilities for automated reasoning for the generation of new knowledge. In this fashion, a recent concept concerns the transition from the traditional SDIs to the emerging Spatial Knowledge Infrastructures (SKIs) [4], where spatial data are enriched with semantic capabilities and therefore allow the provision of advanced spatial data management and knowledge extraction services to the interested parties. The University of the Aegean follows these advances and develops tools and services for spatial data semantic annotation, enrichment with semantic information from third-party sources, and semantic data management, querying and visualization. These efforts will result to the augmentation of currently available spatial data with semantic capabilities and to the implementation of a public SKI for the Aegean Archipelago, accessible by anyone in order to exploit its content and further develop services and export knowledge of added value. The work is implemented within the framework of the Regional Excellence Action, co-funded by the European Regional Development Fund (ERDF) and the Greek State.

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Development of the Online Geospatial Problem–Solving Instrument: Investigating Elementary Students’ perceptual processes in geospatial problem–solving.

Christos Vonapartis Kosmidis, Nikos Lambrinos, Aristotle University of Thessaloniki

Preschool children can correctly identify depicted landmarks from their representations on a map and they can use maps to solve mazes (Jirout & Bewcombe, 2014). This is just some of the evidence for the uniqueness of maps in making symbolic representations graspable even for young students. This might happen because of the affinity of geospatial representations to the immediate spatial experience in the physical world (Davies & Uttal, 2007). Could this also mean that there are similarities between perceptual processes performed when interacting with maps and physical objects? In this case, could we apply research findings and theories on the perception of physical objects also in the interaction with maps? If this is the case, we could use this knowledge to enhance and support problem–solving using maps in school education. In our presentation, we will describe the development of an online instrument with which we will attempt to identify if the action–specific account of perception can be applied when elementary students solve problems using geospatial representations. The action–specific perception account proposes that the perception of the environment is affected by the perceiver’s ability to act (Witt & Riley, 2014). Through the application of our instrument, we will investigate if the level of complexity that students perceive geospatial representations is affected by their ability to solve a problem using them.

In the instrument, eight spatial thinking components are represented in 12 problem–solving questions using age–appropriate geospatial representations. Each problem–solving question is accompanied by a task in which the level of complexity that the relevant representations are perceived is identified. Several programming and graphic design software were used to make the instrument, online and interactive, and to make data collection possible.

Finally, we will describe the challenges that we faced and the solutions we found when we applied the instrument. The online and interactive nature of the instrument allowed us to define the setting of our investigation in detail, having a timed interchange of tasks, using various types of representations, and making data collection possible. Apart from these benefits, our instrument makes the continuation of our research possible even during challenging periods, when restrictions are imposed on free movement and accessibility

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Session GIS

Use of Geographic Information Systems in Cultural Heritage – Between Education and Practice

Jani Kozina, Rok Ciglič. Anton Melik Geographical Institute

Based on the evidence from several European countries knowledge about Geographic Information Systems (GIS) and Cultural Heritage (CH) is extensive and diverse, but scattered across different disciplines and teaching programs and not fully interconnected. No country has a systematic inventory of GIS competences that could be integrated into CH studies and vice versa. However, there is a great need for such linkage in everyday tasks and applied projects dealing with CH. The aim of this presentation is to assess the level, needs and potentials of integrating GIS into CH in higher education courses and professional labour market activities. To do this an online survey was conducted among three target groups (GIS teachers, CH teachers, and CH experts) in six European countries (France, Greece, Italy, Serbia, Slovenia, and Spain) between December 2020 and January 2021. The sample of 649 respondents presents a diverse set of actors encompassing various backgrounds and skills (in GIS and CH), and types and sizes of institutions, which pertain to a wide generalizability of the results. Our findings from studying the competences of higher education teachers showed that there is a great potential and willingness for the integration of GIS and CH subjects. The main observations from studying the labour market and higher education matchmaking revealed that CH experts are in significant need of external GIS support to enrich their professional work. Our research is based on the international project MINERVA – MappINg Cultural HERitage: Geosciences VAlue in Higher Education (Erasmus+, 2020–2022), which promotes and develops innovative methods and tools for teaching, learning and using GIS in the field of CH in higher education. The aim of the project is to support European higher education teachers and lecturers in using GIS in the field of CH in a creative, collaborative and effective way. The project is particularly important in the current situation where tools for effective remote learning and working and electronic platforms are needed.

The art of geographical analysis of covid19 related data

Dimitris Kavroudakis, University of the Aegean

Covid19 pandemic has influenced almost all sectors of social life. Informed decision making regarding pandemic is essential and can be based on credible data which are geo-referenced in most cases. Covid19 data reflect administration areas and in most of the cases are used for comparison between countries. These comparisons, are tricky and ask for careful consideration of a number of country aspects, especially when the variable in question is dynamic and changes happen very often. Comparison between countries should consider relative numbers (e.x. incidents per capita) and should include information regarding spending for health services. Also, medical provision and climate related aspects of each country are also important when comparing between countries. Finally, age structure of population is also crucial and need to be examined. This work illustrates the difficulties when comparing country–data related to covid19 pandemic. We argue that county–level covid19–data ask for standardization in terms of population and geography as well as that correlation of data with country–related characteristics does necessary not imply direct causation.

Presentation of Hungarian writers and poets using ArcGIS Online

José Jesús Reyes Nunez, Krisztina Irás, Ágnes Cselik, Mónika Varga. Eötvös Loránd University

Hungary is participating in an Erasmus+ KA201 project entitled "Biographical map library of European authors", which began in December 2020. Spain and Portugal are also participants and our main aim is to create a map-based library that can be freely accessed across the web. Each country plans to select fifteen of the most important writers and poets, whose literary work is taught in the secondary schools. In this presentation we intend to present in more detail the works developed in Hungary within the project. The workflow can be divided into two fundamental phases: the first one is the data collection, which encompasses not only strictly biographical data, but also those geographical (geo-referenced) data that connect an author to specific places where he lived and worked. Other important stage in this phase is the collection of multimedia data that is used to complete the information represented in the maps and illustrate the story maps. The second one is the creation of the story maps, which begins with the making of maps and follows with the selection of design and specific solutions that are used to present the collected data in a dynamic, attractive and interactive graphic way. All the story maps are made in the ArcGIS Online, one of the most powerful web-based mapping solution in the current Web GIS market.

Session Geopolitics and Naming (I)

Place naming, identities and geography: critical perspectives in a globalizing and standardizing world.

Gerry O'Reilly, Dublin City University

Space and place naming or toponymy, has a long tradition in the sciences and a renewed critical interest in geography and allied disciplines including the humanities. Place: location and cartographical aspects, etymology and geo-histories so salient in past studies, are now being enhanced from a range of radical perspectives, especially in a globalizing, standardizing world and the consequent 'normalization' of place names, perceptions and images worldwide. Nonetheless, there are conflicting and contesting voices. Building on these ideas, fifty researchers came together to collaborate on the Topo Book Project, supported by EUROGEO & Springer Publications. This book presents research on geographical naming on land and sea from a wide range of standpoints worldwide on: theory and concepts, case studies, and education. The interdisciplinary research is enhanced with authors from regional, national and international toponymy-related institutions and organizations including the UNGEGN, IGU, ICA and so forth.

Dis/Appearing Names and Naming of Collective Farms in the Soviet Estonia

Studies of place naming and name changes in Eastern Europe have mostly focused on cities and streets. Less attention has been paid on rural areas. Collective farms were a particular phenomenon that appeared in the Soviet Union from the 1920s onwards and gradually disappeared in the 1990s following the demise of the Soviet Union and the related economic and political system.

Collective farms were usually (forcedly) formed from existing smaller privately-owned farms into larger kolkhozes (cooperative collective farms) and sovkhozes (state-owned farms). Collective farms were more than only farms producing agricultural goods. They became a key territorial reference to people engaged with these farms. The space of a collective farm was simultaneously absolute (a fixed container), relative (in comparison with other collective farms) as well as relational (changing networks of production and consumption of its materiality and symbolic meaning locally, at the state-level and throughout the Union. As a place, a collective farm was a meaningful reference point and everyday life realms for many people.

This presentation analyzes farm names and their naming process in Estonia from the 1940s to the 1990s. Following the occupation of Estonia by the Soviet forces, a large number of rural Estonians were deported in the 1940s to Siberia and other remote parts in the Soviet Union so that the small family-run farms could be joined into larger agricultural economic units that had also considerable social and political powers. Thousands of new territorially-indicating names had to be invented. Most names reflected directly the new political and economic ideology. In the early stages, politically oriented persons involved in farms independently suggested names. Later, an administrative regulation occurred for approving names. The authoritarian control overlooked some interpretations of national romantic names.

Throughout the decades, the share of place-connected names increased and the number of names inspired by the cult referring to a person, the Soviet patriotism and national (political) romanticism declined. Following the restoration of Estonia's independence in 1991, farmlands were privatized again, and almost all of the Soviet-era names vanished—but not all.

Giving Identity to Space through (Re)Naming: Practice of Village Renaming in The Period of The Republic of Turkey

Yilmaz Ari, Bandirma Onyedi Eylül University

The Ottoman Empire, lasting until 1923, included multi-ethnic groups that often lived nearby simultaneously or consecutively. The Ottomans often continued to use the place names prior to their incorporation into the Empire. This situation began to change when the Union and Progress Party promoted renaming the villages in the 1910s. While some 'official' decisions were taken in this regard, there was no significant development within the Empire that witnessed a period of unstable administration, chaos, and wars. The founders of the new Republic of Turkey attempted to build a nation-state and considered name changes as part of this effort. Several studies have been done on the Turkishization of toponymy, focusing on different aspects of renaming implemented by the republicans. The renaming efforts included the decisions in the 2010s, allowing the use of some previously banned names. This work attempts to evaluate multiple dimensions of these initiatives: main motivations to change place names; criteria used; connection or continuity between new & previous names; and how ordinary people perceived name changes. Research is based on

the laws, regulations, guidelines, previous studies on renaming, and the author's first-hand observations.

The Mystery of Hydronomy in the Land of Israel

Tal Yaar-Waisel Oranim College of Education

It was only when I started my geography studies at the university that I first heard about the existence of the Gulf of Aqaba. Of course, I knew well the Gulf of Eilat, the coral reefs and the beautiful mountains that rise above the bay. I knew the city of Aqaba that can easily be seen from Eilat, including the Jordanian king's palace and a huge waving flag, but the gulf was the Gulf of Eilat, without any connection to the city of Aqaba. How can it be?

Naming of places and geographical elements in Israel is a complicated geo-political issue (Azaryahu and Golan 2001, Medzini 2012). History, religion, and politics have been used interchangeably in the selection of place names in the State of Israel from the beginning of the Zionist movement and even more explicitly, after the establishment of the state of Israel; this trend continues today. Similar factors are involved in naming water reservoirs. This chapter examines the history of seas names and their direct and indirect meaning, paying special attention to the role of the education system in shaping the perception of the country's future citizens. In the southern part of the Land of Israel there is the Gulf of Eilat, known globally as the Gulf of Aqaba. The Salt Sea is the lowest place below sea level on earth, and worldwide is known as the Dead Sea. Israel has only one lake, known as lake Kinneret, while for Arabs it is Lake Tiberias and the Sea of Galilee by Christians. This chapter shows that in contrast to the early decades of the state of Israel, economic potential and political interests in naming are gaining precedence nowadays.

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Session Geopolitics and Naming (II)

The Overlaid Past: The Politics of Space and Memory in Gibraltar's 'Doubling' Street Naming Principle

Dr Jennifer Ballantine Perera Institute for Gibraltar and Mediterranean Studies

This chapter engages with the resilience of the use of traditional streets names at Gibraltar together with the resistance they posed to the implementation of official street names. The permanence of traditional names raises questions regarding Edward Said's theory of imaginative geographies, which whilst active at Gibraltar, discursively and in colonially mapping out the territory, proved less effective when it came to the urban centre. In fact, this space had become imaginatively mapped by Gibraltarians though their local knowledge of these streets and through the use of a linguistically and culturally codified naming principle that Services personnel and English settlers found quite impenetrable. By way of unpacking the tensions generated though the (co)existence two very different sets of nomenclature which invariably stem from a similar imaginative process, I shall be drawing upon a number of street name lists produced at different historical eras. A number of these became necessary as navigational guides to assist non-locals in finding and therefore

accessing streets in Gibraltar's city centre. They also draw attention to the limitations inherent in a colonially informed mapping when overlaid by the supposedly liminal yet powerful imaginative mapping held by Gibraltarians. This is a process that not only led to a doubling of names but also to the presence of two Gibaltars.

Reading Ireland's colonial and postcolonial toponymic landscapes

Jonathan Cherry, Brian Ó Raghallaigh, Úna Bhreathnach. Dublin City University

One of the most basic, yet powerful and symbolic acts of geographical appropriation is the naming of places. With a focus on the island of Ireland, this paper proffers a reading of Ireland's rich and diverse toponymic landscapes as integral components of the cultural landscape capable of providing unique insights into the social, political and cultural attitudes and perceptions of those who have both named and renamed places through time. In illustrating the themes of the politics of naming, appropriation, conflict and identity in both historical and contemporary urban and rural settings, a range of examples, from both the Republic of Ireland and Northern Ireland, and a case study from Dublin have been deployed. An overview of the various bodies involved in managing and promoting Ireland's place names today and the legislative framework within which it operates is also given.

Geo-history of the toponymy of Mohács plain, SW hungary

Marianna Ács, Norbert Pap, Máté Kitanics, Péter Reményi. UNiversity of Pécs.

The Mohács plain had strategic and symbolic importance both during the Ottoman occupation and the 17th century liberation wars due to the decisive battles fought on, and military routes crossing the plain, transforming it into a military and memorial landscape. By the 20th century it became one of the most conflicted Cold War border-scapes, where the Hungarian 'Maginot-line' was constructed against the Yugoslav army in the late 1940s. The Homeland War of Croatia was fought just south of the plain in the 1990s and the anti-migration fence of Hungary was also installed here in 2015. The region, which was owned for centuries by the bishops of Pécs and the abbots of Szekszárd but also played an outstanding role in the Hungarian Reformation, is inhabited by Serbs, Croats, Germans and Gypsies besides the majority Hungarians. The geographical names of the plain is well documented from the early Middle Ages, they reflect the different migration waves, the military operations, and different state policies. It is an ideal research area, which as a case study, well represents the different origins and bottom up changes of Hungarian place names as well as top down policies influencing them.

Session Climate Change

Connecting on Climate Change Education – Exploring the role of hierarchical geospatial enquiry through GIS in school geography

Mary Fargher, University College of London

It is now widely accepted that climate change education is crucial to re-focusing teaching and learning in the light of our current climate emergency (Reid, Dillon, Ardoin & Ferreira 2021). The UN Agenda 2030 Sustainable Development Goal (SDG) 13 implies the need for urgent action to combat climate change and its ramifications including a target to improve education (Sustainable Development Solutions Network (SDSN) 2015; UNFCCC 2015). Despite this exigency, climate change education is not always prioritised in schools in ways that can confidently prepare us to reach these targets.

At the same time, it can be argued that school geography (alongside other key subjects) is a vital medium through which high quality climate change education could be channelled. With this central aim in mind, this presentation critically explores the ways in which geography teachers can use GIS to connect their students more meaningfully with climate change education. In particular, the role of a geospatial hierarchical approach to develop enquiry learning about sustainability with GIS (Hwang, 2013) which builds from more simple study of spatial distributions of geographical phenomena to more complex study of temporal relationships over time is considered. It is argued that this approach has the potential to strengthen the connections that digitally-conscious geography teachers can make between using GIS and developing their students' epistemic access (Fargher and Healy, 2020). Exemplars, using Hwang's approach to build enquiry learning activities about climate change are presented for critical discussion. The presentation concludes with some preliminary findings from a current research project working with Masters in Education students on their perspectives on the value of using GIS to develop their students' knowledge and understanding of climate change.

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Heavy precipitation events and their effects on flooding and operations of the fire brigade – case studies from Germany

Michael Leuchner, Valerie Wischott, Niel Döscher, Gunnar Ketzler. RWTH Aachen University

Heavy rainfall is difficult to predict and thus often has serious consequences in populated areas. The fire brigade is responsible for dealing with any damage and is exposed to a large operational load during such events. This paper deals with the effects of heavy rain events

on flooding reflected in the operations of the fire brigade in the two German mid-sized cities of Wuppertal and Aachen and the impact of meteorological and non-meteorological factors on them. A correlation existed with degree of sealing, population size, and topography, but not necessarily with meteorological factors such as precipitation amount. In the recent flooding event in Germany in the summer 2021, the worst flooding did not spatially coincide with the highest amounts of precipitation and indicated an interaction of different influencing factors. This should be taken as an opportunity to further investigate the influence of relevant factors and to integrate the knowledge gained into practical handling of the issue of heavy rainfall.

Can climate crisis go viral? A review of climate change communication lessons in the aftermath of the COVID-19 pandemic.

Eirini Chatzara, Apostolia Galani, George Arhonditsis, Evangelia Mavrikaki. National and Kapodistrian University of Athens

The COVID-19 pandemic, without a doubt, went viral (pun intended). It dominated the media and public discourse, overshadowing coverage of another, longer-term crisis, the climate crisis. Both these planetary-scale disasters have distinct features, but they also share several characteristics, such as the fact that they are associated with biodiversity loss, have a significant economic impact, and have a global impact, albeit disproportionately on low-income and disadvantaged communities.

According to the results of a bibliometric analysis, there appears to be a substantial amount of literature on the impact of climate on virus transmission as well as the environmental consequences of the pandemic. A smaller number of articles, on which the present paper focuses, explore the COVID-19 crisis as an analog to the climate crisis. Their main conclusions are a) Mitigation policies are costly, but not as costly as the adaptation policies. b) The global response should be collectively agreed upon, through international agreements. c) Support for the most vulnerable communities should be ensured. d) Effective climate crisis communication to the public and the policymakers is of the utmost importance.

Based on the above, the present paper attempts to sort through the existing literature connecting the dots between the two intersecting crises, to answer the following questions: a) Did COVID-19 crisis virality have the expected outcomes and if so, could it be replicated in the case of climate change? b) How could the COVID-19 crisis management and all the issues it raised (lack of trust in science, pseudoscience, anti-vaccine movements, and so forth) be "upcycled" to manage the climate crisis more effectively? Since there is no vaccine for climate change, the goal of this paper is to serve as a starting point for further research into effective climate change communication.

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Thought into Action: Applying the SDGs within an undergraduate degree program

Katherine Dunster, Kwantlen Polytechnic University

Since 2016, the Kwantlen Polytechnic University Bachelor of Horticulture Science Urban Ecosystems degree program has used the UN SDGs to frame both teaching and learning about urban ecosystems in our role to supporting health, well-being, and resilience in cities. Like the SDGs, our program is fueled by urgency and the necessity to form partnerships to meet the Goals. This leads to academic inter-disciplinary cross-pollination with geography, social sciences, fine arts, design, applied sciences, technology, and Indigenous knowledge.

Using the campus as a living laboratory, we use critical thinking, shared knowledge and experience, and applied ecosystem management skills to find solutions that work for us, and can help others, through publishing and presenting what we have learned, and by sending our graduates out into the world of local government to help them to adapt to climate change and build community resilience for survival. Healthy urban ecosystems are by nature interdisciplinary and augment recreational, spiritual, and aesthetic values as well as providing tangible human benefits such as food, cleaner air and water, conservation of natural resources, biodiversity, and habitat. This is not a time for inaction, waffling, or hoarding knowledge about solutions and actions, and open pedagogy works well with our program mission and goals.

This paper and presentation will highlight our various applied campus projects that explain how experiential learning (putting thought into action), renewable assignments (Seraphin et al., 2019), and open educational resources (OER) increase equitable access to education and empower students in their learning process. Open pedagogy (Wiley, 2013) is an approach to teaching and learning that draws on OER (KPU Teaching and Learning, 2022) and places each student at the centre of that learning process in a more engaging, authentic, and collaborative learning environment to achieve social justice within the program, and in the communities that students will work in after graduating.

Session Global Issues

American Ethnonationalism in a Global Context

David Kaplan, Kent State University

Ethnonationalism has always been a component of American national identity. Today, white ethnonationalism has surfaced in many areas, linked to other ethnonationalist movements around the world but with a particular American twist. This presentation examines what ethnonationalism is, what varieties are expressed in the United States, and how it compares to other ethnonationalist movements around the world.

The geography of Covid-19 spread in Cyprus at district level: a spatiotemporal analysis of the outbreak and the vaccination strategy followed

Fayad, Philip, Kyriakidis, Phaedon. Cyprus University of Technology

According to World Health Organization (WHO), coronavirus disease (COVID-19) is an infectious disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Cyprus reported its first COVID19 case on March 9, 2020 and responded immediately with a wide range of policy measures and mobility interventions to combat the spread of the pandemic island wide. Containment measures applied include a variety of travel and movement restrictions, a 14-day mandatory quarantine for travelers arriving in Cyprus, closure of schools, hotels and businesses, and mandatory mask-wearing at indoor and outdoor spaces (<https://www.pio.gov.cy/coronavirus/eng>). Like most countries, Cyprus also enforced nationwide lockdowns, strict mobility restrictions locally, closure of national borders and travel limitation throughout the years 2020 and 2021. In the aviation sector, flights arriving to Cyprus were limited or suspended based on the epidemiological situation of the country of origin.

To better understand the impact of response interventions in 2020, in this study we classify the government measures into three key time periods. Period I (Mar.16 – Jun.09) includes the first nationwide lockdown period, Period II (Jun.10 – Dec.31) includes the traffic control period where strict measures are applied and Period III (Nov.12 – Nov.29) includes the first regional lockdown period. Additionally, to examine the geographical spread and distribution of the COVID-19 virus in Cyprus, we gathered all the available open data and analyzed the distribution trends of COVID19 at the district level of detail, creating thematic maps for selected time periods. Using the statistical indices calculated and the thematic maps produced, we study the effectiveness and impact of these measures in limiting the spread of the virus locally. Furthermore, we present the national COVID-19 vaccination strategy implemented by the Republic of Cyprus. The resulting thematic maps showcase the spatial distribution of the administered vaccines per age group in selected dates for comparison. Such analysis and visual exploration can assist monitoring and evaluation of the implementation process of the national vaccination plan.

Post-democratic governance in refugee camps and the newcomers' right to the city in Athens and Thessaloniki

Charalampos Tsavdaroglou

In the last five years, the majority of refugees that found themselves in Greece after the closure of the Balkan route and the prohibition of their movement to Central and North European countries, have been stranded in camps located in the perimeter of Athens and Thessaloniki. These twenty-six camps compose a massive State program for the accommodation of almost 40.000 refugees. There are a number of critical aspects of this program concerning the spatial governance that impact on the quality of life in these camps. Firstly, the project did not follow a standard procedure in the choice and assessment of the camps' locations, failing to take into consideration and include in the decision processes the local communities. This was followed by several refugees' solidarity actions but also xenophobic reactions. Second, the camps violate official urban planning legislation as they are built in non-residential areas. Third, refugees are excluded from any form of participation in the governance of the camps, while they face degrading living conditions in the camps defined by overpopulation, extreme lack of amenities and poor access to city center and social services. In times of covid-19 pandemic, the quarantine measures are lifted for the citizens in Greece but not for the population residing in the refugee camps. Consequently, in Greece, an EU member state, where urban planning must conform to a democratic legislative framework, the refugee camps do not follow national or international planning standards. The paper is based on an extensive three years fieldwork, spatial analysis and ethnographic research in refugee camps of Athens and Thessaloniki. Following the literature of post-democracy, critical approaches on refugee camps and refugees' the right to the city, it discusses the creation of refugee camps as places of law exception that appear to follow a post-democratic model of governance.

Session Social Geography and spatial inequalities

Spatial variations of social capital typologies and sustainable development in Malawi

Ailish Craig, C. Hutton, J. Sheffield. University of Southampton

Social capital has the potential to be a useful mechanism to promote sustainable development in low-income countries and has been associated with improved food security stats, income and resilience to climate change. To account for the multidimensional aspect of social capital it is most relevant when broken into its bonding, bridging and linking typology. Social capital theory hypothesises that bonding, bridging and linking social capital varies spatially with a distinct urban-rural pattern, however, social capital theory is heavily based on high income countries. Similarly, bonding, bridging and linking social capital's association with sustainable development is also likely to differ spatially across a country, but there is limited research in low-income countries. A lack of research that unpacks social capital into its typologies, or accounts for spatial variation, has resulted in limited interest from policymakers and development practitioners. This study aims to further understanding of the spatial variation of bonding, bridging and linking social capital in low-income countries, using Malawi as a case study. We also explore the spatial variations in social capital typologies associations with various sustainable development indicators, including vulnerability and poverty. The methodology used spatial statistics of secondary data.

What contributions to the teaching of spatial inequalities? The example of Travellers

Aurore Lecomte, University of Paris.

This paper proposes to report on experiments carried out in the framework of a collaborative research with teachers in vocational high schools in France on the subject of Travellers. The term Traveller used in this research is an autonym. It is preferred here to the term "Gens du Voyage" which refers to an administrative categorisation. In France, Travellers spatially marginalized, which has been the subject of recent media attention in France. The fire at the Lubrizol factory near Rouen, next to Travellers, raises the question of environmental risks and the right to the city (Foisneau, 2021; Gintrac & Giroud, 2014; Harvey, 2008; Lefebvre, 1968).

Tensions within municipalities over mobile housing and the schooling of Traveller children are examples that come into the classroom. The aim of the research is to deconstruct prejudices and to develop an approach to introduce this issue into the implemented French geography curriculum. One of the levers of change is to practice a geography that uses students' experience as a lever for learning. A course scenario is thus structured around four phases (4I): Immersion, Investigation, Institutionalisation, Implementation (Leininger-Frézal, 2019).

The methodology used is qualitative: to identify the students' representations, a questionnaire survey was drawn up beforehand, and then interviews were conducted with teachers from two vocational high schools in areas where the issue of Travellers arises. In a second phase, the teachers' lessons were observed and the students' productions (oral and written) were collected. Here we present the results of the questionnaire survey and the

lessons designed by the teachers. The location of the spaces assigned to the Travellers was questioned in a geography lesson on urban spaces.

Spatially characterising the (non)attainment of Sustainable Development Goal 1(no-poverty) in light of Covid-19 in South Africa

Simangele Dlamini, Gina Weir-Smith. Human Sciences Research Council

Covid-19 was first detected in Wuhan, China in 2019 and rapidly spread across the globe impacting millions of livelihoods. The pandemic has led to unprecedented changes in people's lives and has gradually affected the global economy. It has undeniably made a remarkable impact on measures to reduce poverty and hunger, such as the Sustainable Development Goals. Researchers concede that Covid-19 has and will continue to slow down the implementation of SDGs as a result of governments resetting priorities and allocating resources to sectors currently prioritised under the Covid-19 pandemic such as the healthcare sector (Mukarram, 2020). Developing and underdeveloped countries especially in Africa and South Asia have been more affected by the pandemic making it more difficult to implement and achieve SDGs. The 2020 Sustainable Development Goals report states that most countries in these two continents saw a decrease in the SDG index from the previous year, a decline attributed to the negative effects of Covid-19 (SDG Country Report, 2020). Covid-19, according to the report, saw a decline in employment, increased poverty, and community livelihoods being destroyed due to lockdowns implemented in an attempt to ease the spread of the pandemic. Most governments, the report states, redirected their efforts in suppressing the pandemic, meaning that the efforts meant to address the social, economic, and environmental goals of the SDGs were redirected to getting pharmaceutical and non-pharmaceutical intervention methods to suppress the pandemic. South Africa, for example, experienced increased socio-economic distress as a result of the pandemic, as was the case in most African countries. The country is particularly plagued by high levels of inequality, poverty, and unemployment. Spatially characterising the attainment or non-attainment of SDG goals linked to inequality, particularly Goal 1, would assist in establishing targeted efforts in alleviating some of the negative effects of Covid-19. Opportunities assist in using open and secondary data sources in characterizing poverty at local scales of analysis.

Session Risk reduction education

UNESCO Global Geoparks and Disaster Risk Reduction Education for school students: The educational programme of Lesvos Island UNESCO Global Geopark

Konstantina Bentana, Zouros Nickolas, Ilias Valiakos. University of the Aegean.

Lesvos Island UNESCO Global Geopark in the frames of its educational programmes has developed and realises the educational programme for school students entitled “Natural processes on our planet–Let us familiarize ourselves with the earthquakes”. The scientific background of this programme was based on the data that came from the realization of the RACCE EU project “Raising earthquake Awareness and Coping Children’s Emotions.

The educational programme includes implementation of the experiential activities of simulation of a strong earthquake using the Natural History Museum’s of the Lesvos Petrified Forest seismic table simulator and the recognition of an active fault in the field. The educational programme was designed to offer to school students knowledge through experience and educating them on the protection measures during an earthquake.

Disaster Risk Reduction Education in Greece’s School Geography

Aikaterini Klonari, Styliani Passadelli Anthoula, University of the Aegean.

Geography as a carrier subject has been a tool for integration of Disaster Risk Reduction (DRR) in the national school curriculum in Greece. To investigate the content evolution of DRR in the school geography curriculum in Greece, this research used the five dimensions of the DRR learning framework, namely knowledge, response, action, participation, and integration, as a platform and a conceptual premise to review the primary and secondary school geography curricula from 2003 to the present (2021). Qualitative content analysis indicated the following: the DRR-relevant content in the geography curriculum used for analysis in this research underwent minimal changes from 2003 to the present; the changes in the DRR-relevant content in the primary and secondary school curricula presented almost the same characteristics. For future revisions to the geography curriculum, it is necessary to realize that the term “disaster” does not describe the natural event per se, but instead its impact on/consequences for infrastructure and society. Such revisions are bound to add more DRR-relevant content that belongs to the “action” and “participation” dimensions, especially at the primary and secondary education levels, and to systematically incorporate the DRR-relevant content of the “integration” dimension into the school geography curriculum.

Field Educational activities on geohazard risk reduction in Lesvos UNESCO global geopark

Zouros Nickolas, University of the Aegean.

UNESCO Global Geoparks promote awareness of geological hazards, including volcanoes, earthquakes and tsunamis, and help prepare disaster mitigation strategies among local communities. Lesvos Island UNESCO Global Geopark promote awareness of geological hazards, by organising field educational activities for Greek and foreign universities, the students of the master programme of the Geography department of the University of the Aegean and various informational activities for school students. UNESCO Chair on Geoparks

and Sustainable Development of insular and coastal areas of the University of the Aegean organised activities for local people and local stakeholders to enhance awareness and understanding such as mitigating the effects of climate change and reducing natural disasters-related risks. These efforts in Lesvos Island UNESCO Global Geopark build important capacity and contribute to building more resilient communities that have the knowledge and skills to effectively respond to potential geological hazards.

Examining natural disaster literacy levels of greek secondary school teachers

Aikaterini Klonari, Dimitrios Karatsolis. University of the Aegean.

This study aims at determining the natural disaster literacy levels of secondary school teachers in Greece. The data in the present research were collected through a natural Disaster literacy Questionnaire (in Google form) conducted on 63 teachers. As a result, it was determined that the general natural disaster literacy of our sample was at a high level, but they were at a moderate level in behaviour dimension and preparedness, which is one of the components of literacy. It is recommended to include subjects and practices on natural disasters in all education levels and to increase information and practices on all-natural disasters (not only about earthquakes) in curricula and textbooks, create educational material for schools and organize training for teachers.

Session Environment

Public awareness and engagement in Environmental Impact Assessment (EIA) procedure during COVID-19 pandemic

Andreea Nita, Laurentiu Rozylowicz. Center for Environmental Research and Impact Studies

The Environmental Impact Assessment procedure (EIA) emerged more than 50 years ago and has been implemented in numerous countries. The main purpose of the procedure was to increase the sustainability of different economic activities by decreasing the impact on environmental components. Thus, EIA implementation by states is considered a statement of taking the sustainability path. A main feature of the procedure is to ensure transparency in the evaluation process of the project, encouraging the public to participate in debates. Therefore, the level of public engagement is essential for EIA to be fully effective, especially in transboundary projects. We investigate the "Level of public awareness and engagement in the Environmental Impact Assessment (EIA)" by comparing the results of two surveys addressed to NGOs before and after the COVID pandemic. We use statistical analysis to compare the results and network analysis to illustrate the network of actors NGOs closely collaborate within activities related to EIA projects. The findings of this study may indicate important recommendations for the procedure, for the scientific field and implicitly for improving the quality of the environment and responding to Sustainable Development Goals.

How to preserve wetlands through a participatory process? (Case study from the Slovenian coast)

Ales Smrekar, Katarina Polajnar Horvat. ZRC SAZU

Wetland conservation involves scientific, ecological and management aspects. Our contribution focuses on wetland management at multiple levels to achieve an effective participatory process and its overall positive impact on wetland ecosystems and local sustainable development. The methodology presented at this conference in the paper "Wetland Memorandum" as a tool for successful wetland management helps coordinate and build consensus with the various stakeholders involved in management and reduces disagreements between wetland conservation stakeholders and statistis seeking economic development. All planned activities leading to sustainable development of the wetland and its hinterland were also included in our pilot area in the Local Memorandum for Cooperation for the Conservation of the Wetland of the Sečovlje Salina Nature Park and its Hinterland.

The Local Memorandum, based on the cooperation of all signatories, aims to activate the process of joint actions for the further sustainable development of the area. It is based on an interdisciplinary approach that ensures the coherence and feasibility of actions, and is designed as a voluntary memorandum between public and private entities to define the objectives, actions, initiatives and risks to be considered in the implementation. Based on five events with shares in 2020 and 2021 in the areas of management and um and social and economic entities associated with the Sečovlje salt pans and hinterland, we harmonized 12 objectives and included them in the Local Memorandum, which was signed by 16 stakeholders. As a next step, a Regional Memorandum for cooperation in the conservation of marine and coastal protected areas was prepared for the wider area of the Slovenian coast. The Regional Memorandum for cooperation is also based on the cooperation of all signatories, but it is looser. It is based on an event in 2022 on an interdisciplinary approach mainly between public bodies to define only six objectives. The Regional Memorandum is in the process of being signed by various stakeholders. The paper is the result of the Interreg

"Wetland Memorandum" as a tool for successful wetland governance

Katarina Polajnar Horvat, Ales Smrekar. ZRC SAZU

Our research focuses on implementing multilevel governance of wetlands exploiting the flexibility and feasibility of the River/Wetland Contract methodology further developing it to marine protected areas. Moreover, we want to achieve an effective participatory process and its overall positive effects on wetland ecosystems and their protection as well as on local sustainable development. The aim of the research is to develop a methodology for establishing the Wetland Memorandum, a voluntary agreement that ensures sustainable management and development of wetlands, ensures better coordination and consensus building among stakeholders involved in management, and minimizes discrepancies between environmental issues and economic activities in wetlands. It is a type of agreement that adopts a set of measures in the areas of public services, economic return, social value and environmental sustainability. The Wetland Memorandum and the integration process for establishing it in Sečovlje salina Nature Park proved itself able to overcome conflicts between institutional and legal jurisdiction and is showing itself to be a dynamic path capable of activating a desirable relationship between various interests and supporting new forms of multi-sectoral stakeholder participation in wetland management. It has also contributed to a dialogue and shared responsibility among stakeholders.

Session Geospatial thinking

Large-scale giant maps. Are they powerful tools for developing spatial abilities in kindergarten pupils?

Christina Zisi, Aikaterini Klonari, Nikolaos Lambrinos. University of the Aegean

The development of kindergarten pupils' spatial abilities can be achieved with well-designed teaching interventions resulting in improvement that is maintained and leads the child to perform better in the future. Designing proper teaching interventions for spatial abilities in kindergarten is a new topic –despite their reference to the curriculum– and there is lack of appropriate teaching interventions or materials for their improvement. Large scale-giant maps are powerful tools for improving spatial abilities, and this study with the use of two large-scale giant maps and the implementation of the proposed teaching intervention aims to prove it and fill the gap.

Educational Research on Greek Students' Geospatial Thinking

Vlachou Vlachopoulou, Pavlides Spyridon, Aikaterini Klonari, Chatzipetros Alexandros. Aristotle University of Thessaloniki

The purpose of our research was to investigate the geospatial abilities of the third class Junior High School (JHS) students. The research tool was a questionnaire containing 26 closed-ended questions and included visual material such as thematic maps, satellite photographs, cartographic symbols and questions of knowledge, comprehension and interpretation. The students answered it electronically. The IBM SPSS Statistics 25 statistical package was used for data processing. The sampling was randomly picked by groups and 1502 students of 75 the third class of JHS from the 13 regions of Greece were participated. The results showed that the students have lack of basic geospatial skills and geographical knowledge. Specifically, the research findings showed that students know the points of the horizon but they cannot be oriented and they cannot determine a location.

Regarding the scale, the students do not seem to have realised the sizes of the scales. Also, a significant percentage >50% have not understood the meaning of the relevant position and cannot identify elements of space using reference points. A great percentage of students also has serious misconceptions in determining the direction and consequently the orientation. In addition, about 30% of the students, can't choose the appropriate map according to a hypothetical problem. Moreover, half of the students have difficulties in using thematic maps and they are not able to interpret the information they present, which indicates that there is a lack of basic knowledge and a lack of critical thinking. No correlation of the results was found with the gender of the students, but it was found with the socio-economic background of the students, such as the place of the school and the education of the parents.

Teacher's perceptions influence the development of students with dyslexia geospatial abilities?

Styliani Passadelli Anthoula, Aikaterini Klonari. University of the Aegean

Students with dyslexia often display low performances in school, this happens in many courses and one of them is geography (Klonari & Passadelli, 2019). Geography as a spatial science is directly linked to the development of spatial thinking and the development of students' spatial abilities (Passadelli et al., 2020). Previous researches have shown that if geography teachers apply differentiated methods, the dyslexic student's performance could be improved (Klonari & Passadelli, 2019). This research investigates if geography teachers' views towards dyslexia affect student performance. For research purposes, 474 questionnaires were distributed to students (237 dyslexic students and 237 non-dyslexic students) aged 13-14, all over Greece. Also, 61 questionnaires were distributed to secondary teachers teaching geography to these students. The responses were coded using SPSS v23.00. The results showed that students who had low performance their teachers had negative views and attitudes towards dyslexia.

ICT-based teaching scenario about "Population distribution in Greece": A case study

Ourania Rizou, Aikaterini Klonari, Kavroudakis Dimitrios. University of the Aegean

Education reform around the globe demonstrates a shift from the teacher-centered model to one, where interdisciplinarity and holistic approaches in teaching and learning play a central role in the Curricula. Infusing teaching sessions with multimedia presentations and multimodal scenarios leads to a higher degree of student participation and simultaneous training into a multitude of literacies.

Statistics can be a very powerful tool for processing these, through the use of visual (re)presentation of statistical data in the form of simple statistical functions/terms, simple or complex graphs and 2D-3D maps. When Statistics is combined with Geography and ICT we expect students to develop a high level of skill in a multitude of literacies such as statistical, geospatial and digital, all in the prospect and promise of a more viable and sustainable future.

This study was conducted to identify students' awareness, views and skills regarding the use of real statistical datasets visualized on top of the geospatial background of the 13 Administrative Prefectures of Greece. Moreover, we aimed to read their reaction to an ICT-aided teaching scenario built specifically for teaching basic statistical functions. The case study involved 41 students (14 boys and 27 girls) of a High School on Lesbos Island, Greece. The tools we used to carry out the activities during the intervention were ICT computer lab, worksheets, power point and the web-based platform statistics4school. The ICT-teaching scenario was based on guided exploratory method, collaborative teaching method, team work and student-centered method. The results confirm that (i) students achieved a deeper level of comprehension in geospatial Statistics (ii) they cultivated cognitive and social skills and literacy in general (iii) they participated in the learning process through activities based on guided exploratory method with the aid of ICT.

Session International cooperation in geography education

Small but Smart: International Shared Virtual Class Link-up During the Pandemic 2020–2021 – Third-Level Students in Ireland and Israel

Gerry O'Reilly, Dublin City University. Tal Yaar-Waisel, Oranim College of Education.

This paper explores the experiences of a shared international class link-up between students and teachers in Ireland and Israel in Spring 2021 during the Coronavirus pandemic lockdowns, and hence the use of virtual education within and between the two countries. Essentially the primary aim was experimental T&L with the objectives of getting students from different cultures to interact, to get to know each other and to discover their shared geographies, but also to reflect on their own self-perceptions of their countries and their preconceptions of another country and people. In furthering this, group work was based on a series of short activities: (i) Hello – Ireland and Israel; (ii) Model lesson: jointly preparing a geography class on Ireland and Israel; (iii) Student Fieldwork: preparation of a joint fieldtrip for students to Israel and also to Ireland; and (iv) Evaluating experiences of the class link-up. The main communication devices used were Zoom for whole joint class, and students auto-selected in first place WhatsApp for small mixed group work, followed by Zoom in second place. Despite some challenges for students, in their evaluations they all agreed that the experience was positive for them and higher order thinking.

A story of a passport: Teaching the Holocaust with primary sources, in Austria and in Israel

Israel Ben-Dor, Sonja Danner. Private University College of Vienna

The use of primary sources, such as geographical or historical documents, may "revive" the teaching and result in a greater involvement of students in the class and lead to greater understanding of the subject. A historical and geographical study of the Austrian Jewry in the Holocaust by using passports, pictures, maps, and other personal documents, had created interest in Israeli students and made them ask questions and continue to explore. The positive results of teaching students in Israel prompted the researchers to extend the study to Austria, as the Israeli are descendants of the victims, and the Austrian are descendants of the perpetrators. Irish students learned this lesson as a control group and the research has become trilateral (Israel, Austria, and Ireland).

The main idea of this CAR (Collaborative Action Research) was to find and explain the similarities and differences between the responses of Israeli and Austrian students learning the Holocaust of Austrian Jews, by using primary sources documenting the personal story of Karolyn Bloch, who managed to escape from Vienna to Eretz Israel at the last minute.

Seven lessons in zoom were delivered to 145 BA and MA students in Israel, Austria and Ireland during their training for teaching. Subsequently the students were asked to express their questions about the story on "Padlet" boards and to reflect with the help of a questionnaire by "Google Forms". The qualitative content analysis, according to Mayring, is used to analyze the questions and answers of the students.

The personal story of Mrs. Bloch is a Microhistory that reflects the Macrohistory: the extinction of the Austrian Jewry in the Holocaust and the Holocaust in general. The study provides the necessity to discuss problems of immigration and refugees today. It was found that narratives and environmental context have a great impact on students.

Education for sustainable water consumption in multinational collaboration teachers training: Goals and Challenges

Caroline Leininger-Frézal, University of Paris. Sandra Sprenger, University of Hamburg.

Global challenges such as climate change or water scarcity require specific educational concepts (Fensham, 2012). One of these is Educational for Sustainable Development (ESD) (Leicht, Heiss, & Byun, 2018), within the context “Water” is an central issue. This is the focus for an international project, which was done in parallel courses in geography education of teacher training in Hamburg, Paris, and Israel. International virtual academic collaboration enabled this project using different long-distance communications options. Due to current pandemic state different digital teaching opportunities were used. The main goal of the project was to enable students to have experiential and meaningful distance learning to implement ESD in teacher training seminars in geography (Sprenger & Nienaber, 2017). Another target was to use the chances and challenges of interculturality to develop learning approaches of virtual, collaborative didactics while experiencing with the goals of Educational Sustainable Development. Questions were asked following this learning: What is the added value of intercultural encounters? What are the benefits this project makes for the future teacher career? What is the added value of intercultural encounters be integrated into the profession in the future? How can intercultural and diversity be integrated more firmly into teacher training courses in the future?

Students were asked to teach and learn from each other about the current state of water in their countries, its challenges, and existing solutions. Students were asked to choose and explore a specific water topic in this field (e.g. floods), they asked questions and found possible courses of action. During the seminar the students developed virtual teaching conceptions for geography lessons (ArcGIS Story-Maps) regarding sustainable development and water. Ten mixed groups of students presented the research to the multinational class. The impact of the project was analyzed from the analysis of the Storymaps produced by the students as well as the student diaries filled in during the project (France, Israel). The feedback for many of the students show, that it was an extraordinary opportunity to meet, get to know and work together. It allowed them to discover the issue of water from different perspectives. Language challenge, culture differences and online learning difficulties were an integral part of this project and its challenge. Although many obstacles occurred, we believe this project enable students to use the skills they acquired in their work as future teachers. The presentation will outline the conceptual basis and results of the seminar.

Using Project-Based Learning in the Development of Geography Projects: An Experimental Study for Social Studies Teacher Candidates

Eyüp Artvinli, Leyla Dönmez, Niyazi Kaya. Eskişehir Osmangazi University

The aim of this research is to analyze the project-based learning experiences of social studies teacher candidates in the context of geography projects. Recently, the 21. century these skills, known as skills and aimed at producing while learning, attract attention. As one of the methods that will allow to acquire these skills, project-based learning is emphasized in the literature. However, social studies teacher candidates' perspectives on project-based

learning and their competencies about project-based learning 21. century degree to which it is suitable to achieve skills is an important problem. For this reason, it is aimed to analyze the project-based learning experiences of social studies teacher candidates with this research. Experimental design was used in this study. The research data were collected from social studies teacher candidates. A total of 35 prospective teachers were involved in the project education and a total of 15 projects were revealed. In the process of data collection, open-ended questions were asked to prospective teachers that would reveal their perceptions about project-based learning, and data were collected. According to the findings obtained, it has been concluded that the perceptions of social studies teacher candidates about project-based learning are at a low level. However, it has been concluded that a certain proportion of pre-service teachers, although very few, are interested in project-based learning. In total, 35 social studies teacher candidates have completed 15 projects and experienced the project-based learning process. After the project-based learning education that the candidates of social studies teachers received, they came to the opinion that the social studies course is a special course for the project-based learning model and is a research area for project applications. In order for project-based learning to be effectively used for geography projects, especially it is recommended that candidates for social studies teachers conduct a project-based educational process during their undergraduate education.

Session Geography education

Research on Language in Primary and Secondary Geography Education: A Systematic Literature Review of empirical Geography Education Research

Neli Heidari, Markus Feser, Nina Scholten, Knut Schwippert, Sandra Sprenger. University of Hamburg

Academic language use in primary and secondary Geography education has currently gained importance due to the increasing linguistic heterogeneity in classrooms. As subject-specific language in Geography education differs from the social language that students use in their everyday lives, language-aware Geography education contributes to addressing subject-specific language demands. The explicit education of language in Geography classrooms counteracts students' language and learning barriers limiting the access to academic content (Morawski & Budke, 2017; Schleppegrell, 2004). However, there seems to be little empirical research and no systematic overview of studies on language in Geography education. Thus, the aim of this paper is to systematically review publications according to the PRISMA guidelines that empirically researched language in primary and secondary Geography education to provide a synthesis state of knowledge for future research in that particular field contributing to addressing research desideratum (Page et al., 2021). From the databases ProQuest, Scopus and Web of Science, after reviewing n articles a total of 38 studies were included based on predefined inclusion and exclusion criteria. The empirical studies were categorized with reference to the examined language as well as their subject-specific themes, concepts of space and working methods. The main findings of the systematic review show a significant tendency regarding the examined language and the subject of Geography, which will be displayed in detail at the conference. Further implications of our findings for future research in Geography education will also be outlined at the conference.

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Planting a seed: Sustainable education for students with Additional Support Needs

Don MacKeen, City of Glasgow College.

The realities of climate change have made meeting Sustainable Development Goals even more urgent, not least in terms of education. In Scotland's Curriculum for Excellence (CfE) these goals are promoted in the Learning for Sustainability initiative which aims to embed

sustainability in education. While inclusion is claimed to be a non-negotiable aspect of CfE, the reality is that for many students with Additional Support Needs (ASN), access to a high quality education is limited. This paper looks at a case study where urban gardening is used as a teaching tool for students with ASN. The City Works programme has grown out of nearly twenty years of work with ASN students, using urban gardening as a vehicle for developing citizenship, groupwork skills and a greater understanding of sustainability. Staff and students were interviewed to ascertain their experience of the project and the value of a sustainable and inclusive education are discussed. Finally, it is argued that this educational approach should be developed further, in coordination with other educational professionals.

Embedding Ethics in Geography: An examination of bringing geospatial ethical frameworks into the classroom

Doug Specht, University of Westminster.

The last few years have seen a many discussions around geospatial ethics, and since 2018 multiple ethical frameworks have emerged. UNICEF and the UK Statistics Authority have both produced similarly tilted documents on the Ethical Considerations of using Geospatial technologies or data. The Locus Charter has presented us with 10 guiding ideas on how to be more ethical in our work, and other organisations are presenting similar ideas and publications. There is also discussion about how these documents might impact on the work of people in the geospatial industries, with focus groups, interviews and surveys run by numerous organisations and think tanks to look at how these documents might be being used. Within this remains a gap, education. While there are courses on geospatial ethics available, some free through online platforms, some as part of university courses, these remain on the periphery and often require individuals or companies to 'add-on' ethics as part of their training or staff development. This session will draw upon work with secondary school students to look at how we can use the numerous frameworks developed to teach geospatial ethics as part of the geography curriculum. Furthermore, this talk will examine what can be learned from these integrations for the better inclusion of ethical learning inside organisations. The many frameworks that have been produced are an incredibly important step in increasing our ethical use of geospatial data and technology, but without a fully developed educational strand they risk being marginalised, forgotten about or merely used to ethics-wash poor practice.

Using "Spontaneous Geography" to Reason About Environmental Problems

Cédric Naudet, University of Paris

We would like to present an approach thought within the theoretical framework of "experiential geography" (Leininger-Frézal, 2019) to question how it can contribute to making explicit the articulation between reference social practices and classroom practices. Our hypothesis is that this approach makes it possible to understand the complexity of environmental issues. We will mainly use experimentation resulting from a phd thesis in progress on the explanation of the "structuring knowledge" of school geography. It has been designed to understand the concept of resource. It is a sequence of "experiential geography" organised in 4 stages:

1/ An immersion in the social practices of reference in order to grasp the pupils' representations of what is conceptualised in geography as a "resource". To do this, I have constructed a problematic situation : "A televised debate opposes several actors after the

attribution of the 2022 football world cup to Qatar. Does this country organise the World Cup thanks to its gas?". The space experiment is indirect: documents should enable students to identify with four actors – a Qatari, a representative of Greenpeace, a representative of the Anticor association, a representative of Saudi Arabia. The objective is that the pupils should be able to grasp the practices, spatial representations and strategy of these actors. To do this, the pupils must look for arguments, according to their role, in a documentary corpus taking into account the economic, social and environmental dimensions of the organisation of the competition by Qatar as well as opposing points of view. For each position, pupils must identify the arguments at stake: the country is rich in hydrocarbons and has a financial income from them; these resources are drying up and the country needs to develop new activities; energy exploitation and the construction of stadiums has environmental and social consequences; the country needs powerful allies to assert itself on the international scene. It is a question of constructing, through an experiential situation, the conditions for the emergence of the concept and then promoting its learning by identifying its attributes.

2/ The interaction takes the form of a debate. A certain number of precautions are taken in order to achieve this. Within each group, four roles are distributed: a speaker who must intervene in the debate, a rapporteur who must take note of the content of the debate, and advisers who must help the speaker to argue. The debate is chaired by the teacher, who can refocus the debate, but this phase is mainly socio-constructivist in order to allow students to compare their opinions and experiences. Analysis of the recording of this debate shows that the different attributes of the concept are addressed by the pupils.

3/ During the institutionalisation phase, the concept map was projected to identify the attributes of the concept and to identify the representations of the actors vis-à-vis the resource.

4/ The implementation was approached with the discovery of another situation: the use of water in the Middle East. The pupils were able to verify that the heuristic scheme could work for another resource, in another country. The students then completed a planisphere by identifying the main producing countries, the main consumers and the main geoeconomic and geoenvironmental tensions.

Real demand for geography teachers in Poland: analysis of online job adverts in the years 2019–2020

Danuta Piróg, Pedagogical University of Kraków

For many years Poland experienced an excess number of teachers. A turbulent labour market situation after the political transition encouraged people to seek stable employment in the education sector. On average 7,31 teachers applied for each teaching position back in 2010 (Piróg, 2012). With time and due to several complex reasons fewer and fewer people wanted to become teachers (Piróg and Hibszer, 2020). In recent years school principals have started to complain about staff shortages. There are no official statistics regarding the demand for teachers and no data as to how many teachers, if any, are needed in schools. Consequently, it is difficult to take action or start a debate on counteracting negative education and social impacts of staff shortages.

The paper presents the results of a study where for 18 months we monitored job adverts addressed to geography teachers in Poland. Online job adverts are commonly recognized as a credible and topical source of data about the real demand on the labour market. In order to examine the scale of demand for geographers, we monitored all websites where public school principals are obliged to publish information about vacancies. The objective of the

paper is to discuss the changes in demand for these specialists and reflect on the effects of this situation, including its impact on the quality of geography education.

Our research has shown that in the 18-month period nearly 3 500 geography teacher jobs were advertised. A vast majority of the advertised positions were part-time. Jobs located in cities amounted to over half of all vacancies. In-depth analyses of the data demonstrated that Poland has a shortage of geography teachers. Given the high average age of existing geography teachers and little interest among geography students to pursue careers in education, this problem will likely exacerbate in the coming years.

Higher Order Thinking by Setting and Debriefing Tasks in Geography Lessons

Uwe Krause, Fontys University of Applied Sciences

Tasks are a powerful instrument for geography teachers, as they let students engage with the subject. To advance cumulative learning of the students, teachers have to ensure that students learn how to deal with complex and abstract knowledge structures. Dutch teachers face a dilemma when it comes to task setting: The intended curriculum aims for a considerable part at (parts of) higher order thinking, whereas the high-stakes exams have a clear focus on the use of thinking strategies. This presentation explores the task setting and debriefing of Dutch geography teachers by analysing twenty-three video-taped lessons in upper secondary education by using the Geography Task Categorisation Framework.

Session Geography education for sustainable development

SDGs in Geography Teaching: examples of application to secondary school curriculum in Spain

Nelli Yakunina, UNED

Responsible growth and conscious citizenship are indispensable conditions for achieving Sustainable Development Goals (SDGs) conceived to face global challenges and to guarantee viable progress at social, economic, and environmental levels. As an intrinsic part of ways to tackle the most important contemporary issues, SDGs are entering into classrooms at all the levels of educational systems in Europe and all around the world. Geography syllabi of the most national curriculums for secondary schools offer multiple opportunities for promoting SDGs objectives, and to embrace cross-disciplinary approach, much in trend during the last decades. This paper presents qualitative study that explores theoretical foundation for application of SDGs to the secondary school syllabus, as well as a brief comparison of the national and some regional curriculums in Spain. The study then offers an overview of several different didactic implementations carried out in distinct regions of Spain at various levels of compulsory secondary education, all related to SDGs in Geography teaching. The data were scrutinised using qualitative content analysis, with focus on the methodology employed, topics, objectives and learning outcomes. While some of the publications used SDGs as a transversal instrument for the teaching of Geography, others stucked with the well-known conventional methods, yet all of them employed digital tools at some stage or all throughout of the didactic sequence. To put the results obtained into a perspective, they are consequently compared to the similar studies related to other European countries. Thus, some conclusion and direction for future investigation can be drawn at a larger scale, such as indications for the further teacher training, as well as wide spreading of good practice, in order to increase SDGs contribution to learning outcomes related to social responsibility and environmental awareness as a part of transversal key competences.

Ride and smile: geographical education in primary school for sustainable development

Daniela Schmeinck, University of Cologne

Climate change is one of the main challenges our planet is facing and its effects became extremely visible to all. Transport accounts for a quarter of the EU's greenhouse gas emissions and its share continues to grow. Ride and smile project aims to foster the development of active European citizens who are aware of the relevance of their individual choices as triggers of change, by introducing in the daily life bicycle as transport mode to schools.

The specific objectives of the project are:

- to promote raising awareness about environmental challenges and a better understanding of the importance of individual choices as factors of change
- to promote sustainable urban mobility principles among pupils and the use of the bicycle as the most effective means of transportation

· reinforcing the development of key competences in pupils, such as communication in foreign languages, digital competences, social and civic competences, including climate action

The paper focuses on the presentation of the developed teaching modules and their theoretical and methodological framework. During the presentation also the results of this project will be introduced.

Developing sustainability through environmental education – Proposal for a field itinerary in Romanian Carpathian Mountains

Theodora Drăgan, Gabriela Adina Moroşanu. University of Bucharest

The 21st century has brought many challenges to the environment and society, with the school playing an important role in educating new generations and engender sustainable development. In teaching environmental sciences, the professor has the role to ensure the bond between students' previous and new knowledge about the processes and phenomena that govern the smooth running of the nature, without resorting to "by heart" memory. In like manner, environmental education represents a key for sustainable evolution which may help strengthen pupils' ability to cope with various situations of anthropogenic impact on the environment.

In the quest for those cognitive abilities aiding second-grade target pupils fathom the societal environmental issues, the current research aims to propose and test an exploratory teaching approach upholding their comprehension of abstract notions currently used in earth sciences. The joint "Mathematics and environmental exploration" curriculum for the second and third-grade level in Romanian elementary schools outlines a logical framework for teachers to instill in their students an ecological behavior in favor of nature. The vast majority of notions in the curriculum can be taught via thematic trips, facilitating students' understanding of the geographical reality.. These are key competencies needed for a sustainable use of natural resources, in the pursuit of the most appropriate solutions to prevent the destruction of observed ecosystems and reduce the effects of existing pollution.

For this case study, the proposed itinerary covers the south-eastern Romanian Carpathians, with the following points of interest: Bucharest – Sinaia– Braşov – Sfânta Ana volcanic Lake – Braşov – Buzău – Bucharest. This itinerary can be covered in 3 days, preferably between April and May, and it is intended for pupils studying in Bucharest. The evaluation of the achievement of the objectives is outlined for all along the field practice. The teaching methods and experimental activities are defined in agreement with the specificity of the natural factors (geology, relief, climate, water, soil, vegetation layers, from deciduous forests to alpine pastures) and anthropic pressures observed on the field and comprise both empirical learning and GIS support documents adapted to 8–10 years old pupils (e.g. introducing each itinerary segment through story maps). The results are expected after the Covid-19 pandemic, when field applications will be possible. We envisage to improve students' ability to respond to environmental issues and to encourage a proactive attitude in full understanding of human influence on nature, in the Carpathian context.

Encountering carbon in the everyday world: using novel contexts and teaching that shifts beyond the obvious targets

Duncan Hawley, Geography & Geoscience Education Consultancy

Teaching about the impact of personal lifestyle choices on carbon production forms an integral part of the school geography curriculum, commonly featuring in units of work on sustainability with the aim of enabling agency for students. However other (geographically generated) aspects of carbon production and storage can remain hidden from students' realisations of the significant negative or positive contributions these can make to anthropogenic shifts to the carbon balance. This presentation outlines novel teaching focus and approaches that enable students to experience a deeper understanding of the science of how carbon production and storage occurs using real examples of the everyday world. The pedagogic approach helps students get to grips with carbon flux in different contexts and tangibly identify the geographical consequences of human interaction and intervention in the physical world. The aim is to engage students in 'novel' powerful geographical knowledge and confronting the associated threshold concepts, and thereby extend agency to evaluating the sustainability impact of human activities that can otherwise be easily overlooked.

Assessing media coverage of the EU's clean energy strategy to train teachers

María Luisa de Lázaro Torres, Javier Álvarez-Otero, Miguel Ángel Puertas-Águilar. UNED

Ensuring access to affordable, reliable, sustainable and modern energy for all is the aim of Sustainable Development Goal 7. But is sufficient socioeconomic effort put into achieving it? The main objectives of this paper are to examine the increase in clean energy use in the European Union, determine citizen perceptions on clean energy, highlight the main concepts on these issues, and employ the relevant knowledge to train teachers. We will analyze the issues using anglo-saxon source media (i.e. BBC web page information and the New York Times), and contrast it with Spain, using the press of recent months. Consequently, this work results in a selection of relevant content to train secondary school teachers on enabling sustainability on the curriculum.

Geography Education for Sustainable Development and Global Citizenship Education

Nikolaos Voudrislis, University of Thessaly

Education for Sustainable Development and Global Citizenship is one of the most strategic areas of UNESCO Education Programme. It aims to equip students with knowledge and skills to promote sustainable development, human rights, gender equality, peace, global citizenship, and an appreciation of cultural diversity (United Nations, 2015: 17). In many ways, Geography could be considered the science for sustainability (Meadows, 2020). Geography education addresses the most pressing global environmental problems and issues related to globalization and sustainability, emphasizing action and participation. It thereby helps future citizens to understand how human societies and economies develop, interact with and change the natural environment in time and space (Skarstein & Wol, 2020).

Geography Education has a distinct advantage in developing a holistic understanding of global environmental challenges, as it touches social and natural sciences with its interdisciplinary approach. The intersectional and interdisciplinary nature of geography is

crucial for understanding the complexity of sustainability goals and what can (and should) be done to achieve a more sustainable future. Achieving the sustainability goals also requires geographical competencies such as knowledge and comprehension of the Earth's major natural systems (soil morphology, water systems, climate, vegetation) and the interactions between ecosystems and socio-economic systems (agriculture, settlements, transportation, industry, trade, energy, population, etc.). Therefore, in today's interdependent and interconnected societies, Geographical Education can provide skills and concepts for a better and thorough understanding of our existence and the human-environment relationship.

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Soil for you, soil for me, soil for us. Pedosphere aspects of geographical education from sustainable development perspective

Przemysław Charzyński, Marcin Świtoniak, Magdalena Urbańska, Nicolaus Copernicus University in Toruń

One of the challenges of the modern world is to increase social awareness of the environment and geography lessons create an opportunity for transferring the skills of conscious management of the Earth's resources. The research clearly shows that students lack an awareness of threats related to the environment (Urbańska et al., 2022). The awareness of threats related to various Earth spheres is considerably differentiated. Research shows that the soil issues are the least known in this aspect. Soil education is deficient in many countries. In schools, soil topics are usually taught briefly and with little detail. This may result in students' perceiving the pedosphere as less important than the other spheres- "just" 'dirt' we walk on! A proper approach to the issues of sustainable development without an full knowledge of the environmental threats is impossible.

How to encourage a "digital native" to understand the soil – something so "down-to-earth"? The best option is to change the way of knowledge transferring to make this process much more attractive for modern generations. There are a lot of possibilities: mobile games related to soil (free game-based learning platforms) or on-line and off-line mobile applications for the soil profile description. Presented digital platform SYStem consists of: database, Webservice, web portal, mobile/web application (<https://sites.google.com/site/shareyoursoils/home>) and combines soil education with ecological issues and exciting social networking service. This motivational, challenging, and rewarding digital environment helps learners work toward a goal while choosing actions, and experience the competition and consequences of those actions (experience level/ranks/digital rewards/skills badges/points). This kind of interactive competitive game-based techniques in learning process can be a perfect way to increase public awareness of soils. " Learning by doing" or even "learning by playing" is a key aspect of multitasking nature of digital natives as well as the ability to apply the knowledge in practice.

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Session Landscape

Disentangling trophic relationships among carnivore species in Eastern Carpathian landscapes

Anna Steluta Manolache, Teodora Sin, Mihai Pop, Marissa Dyck, Viorel Popescu. University of Bucharest

Eastern Europe is one of the few places that harbor an intact terrestrial carnivore guild, with the Carpathians acting as the stronghold for European carnivores, as there is increased recognition that humans, through direct (e.g., exploitation) and indirect effects (e.g., land use change, forestry, hunting, livestock production, and farming) may have a critical role in shaping trophic relations in animal communities.

Between 2020 and 2022 images collected from 50 camera trap stations installed in Eastern Carpathians were analyzed the impacts of potentially dominant apex carnivores on the occupancy and detection of a mesocarnivore to understand potential impacts reintroductions of apex predators may have on smaller carnivores. Material was collected and analyzed from terrestrial carnivore species: gray wolf (*Canis lupus*), Eurasian lynx (*Lynx lynx*), brown bear (*Ursus arctos*), wildcat (*Felis sylvestris*), red fox (*Vulpes vulpes*), as well as several mustelids: badger (*Meles meles*), European pine marten (*Martes martes*), beech marten (*Martes foina*), stoat (*Mustela erminea*), and least weasel (*Mustela nivalis*) ungulates: roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*), wild boar (*Sus scrofa*) and chamois (*Rupicapra rupicapra*). We use multispecies occupancy model of two or more interacting species (Rota et al. 2016), structural equation models (SEM) to explore how environmental and anthropogenic variables affect the marginal occupancy (occupancy without accounting for interactions with other species), co-occupancy (overlap in marginal occupancy between species), and conditional occupancy (effects of each species presence on other species detection and occupancy) of lynx, wildcat, and wolf in the Romanian Carpathians (Dyck et al. 2022).

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Analysis of potential reforestation areas using geospatial technology

Ashvin Wickramasooriya, University of Peradeniya

With the increase of the population, natural hazards, and climatic change there is a severe impact on forested areas within the last six to seven decades in Sri Lanka. Thus, continuous assessment monitoring of anthropogenic activities and dynamic processes are influenced to reduce the forested areas. It has been observed that the forested areas are reduced at an exponential rate within the last ten years and therefore, these forested areas are to be protected and new potential areas to be reforested without further delay. However, there are many drawbacks such as accessibility, time-consuming, etc. that arise with monitoring these dynamic processes physically. Therefore, this study focused to analyze and predict deforesting vulnerable areas which can be reforested in the future. To overcome this task, open data sources and aerial ancient photographs are used and spatial technologies had

applied. After analyzing the temporal and spatial variation of forested areas using archives aerial photographs and satellite images, it was observed that the forest cover was about 37% out of the total Sri Lankan extent during the 1960s and has decreased up to about 29.7% in 2016. Thereafter, it was a further reduction of forested areas could be observed specially in the Northwestern and Southeastern region in the country during the last five years, and was estimated that the total forest cover by 2021 is about 20%. According to the agenda 2030 for Sustainable Development launched in 2015, rehabilitation of forest cover is under goal number 15 i.e. Life on Land. Thus, the identification of potential reforested areas would be the most suitable alternative way to minimize the impact of deforestation. Multicriteria Decision Analysis Method (MCDAM) had been applied and ArcGIS and ERDAS Imagine software are used to analyze the most suitable areas to be reforested and to recognize the forested areas to be protected. The main criteria which were considered in the MCDAM include the availability of open land areas, site capabilities, existing natural regeneration in an area, historical vegetation, and crop suitability. The study has recognized seven key areas and more than thirty-six singular areas which can be used as reforested areas and if the reforestation will be implemented according to the analysis the forested area can be increased up to about 27% by 2030.

Changing “soundscapes” transforming local spatial perceptions. – The case of Ellopia–

Eleni Damopoulou, University of Thesaly

While the environmental crisis appears as an ever-growing difficulty affecting the everyday lives throughout the planet via increasing global temperature, steady decrease of sea-ice, loss or extinction of ecosystems, and an extended trending increase of natural disasters and extreme weather events, the necessity of prompt and sufficient solutions emerges. Thus actions such as the United Nations' Sustainability Development Goals (SDGs) have arisen (United Nations, 2015). Such efforts assume the existence of a presupposed universality of the problem and consequently of the solution plan. To what extent is this true however? Social scientists highlight the importance of the environmental inequalities that have to be taken into consideration if we intend to a sustainable future (Jenkins et al, 2016; Moore, 2016). This paper focuses on a local Greek example where wind turbines have been installed, emphasizing on the experience of the natives. More specifically, the study is implemented in a Greek village named Ellopia, which is located in the region of Voiotia. In the latter, during the last decade a great number of wind turbines has been placed, causing significant changes to the area's "landscape" and "soundscape" (Truax & Barrett, 2011). The project's purpose is mainly to investigate how the local communities have adopted to this change, but also to discover the specific factors that form different reactions and attitudes. The collected ethnographic data include visual and acoustic recordings. The material presented here, supports the argument that "landscape", as an analytical tool, could be more enriched and inclusive of the experience studied when combined with that of "soundscape", offering a deeper knowledge and understanding of the situation.

GEOLAND: Digital Educational Geoinformatic Methodologies for Monitoring Landscape

Luc Zwartjes, Christos Polykretis, Dimitris Alexakis, Karl Donert, Rafael de Miguel. EUROGEO, FORTH

Landscape is both a physical reality and the representation that we make of it. It is the face of a land with all its natural and anthropological elements and, at the same time, the feelings and emotions that it arouses in us when we see it. Therefore the European Landscape Convention indicates that assessment of all these different dimensions that exist in landscapes should be considered by public authorities while adopting policies and measures at local, regional, national and international level for protecting, managing and planning landscapes throughout Europe.

With this situation in mind, GEOLAND – an Erasmus+ KA2 Higher Education project – focuses on NATURA 2000 sites, with as goal to establish a learning path for the HE students and professors in order to apply their geospatial analysis knowledge in Landscape monitoring and protection, using digital skills like public participation GIS, and low-cost geoinformatic. In particular the main aim of the project is to develop a web based GIS platform where numerous geospatial data may be uploaded, analyzed and students' opinion about landscape will be asked through questionnaires and crowdsourcing.

The project will thus provide the opportunity to students and professors, being interested in definition and implementation of landscape policies, to play an active part in setting sustainability indicators of desirable landscape quality objectives (LQOs). In addition, GEOLAND will attempt to train the future employees to identify and summarize the environmental and cultural stratification in the examined landscapes through a sophisticated GIS oriented Landscape Character Assessment (LCA) methodology. . In this direction, the project will develop a new methodological framework for monitoring Landscape tailored to the needs of the new digital era, safeguarding thus the inclusive nature of learning opportunities. Moreover, the project will provide training content matching the digital education needs.

Session Rural Geography

The Development of a Distributed Monitoring System For Precision Agriculture In The Northern Aegean Islands: The AGRICA II Project

Stefanos Plastras, Sofia Polymeni, Dimitrios N. Skoutas, Charalabos Skianis, Georgios Kormentzas. University of the Aegean

One of the main challenges for the sustainable long-term development of agricultural food production chains within the context of precision agriculture is the integration of new technologies in order to achieve high performance while maintaining high quality and a small environmental footprint. The monitoring, acquisition, and analysis of a vast volume of heterogeneous data from various aspects of the agricultural production ecosystem is the basis of technological advancements in farming. In this paper, we present the AGRICA II research infrastructure, which aims to combine Internet of Things (IoT) technologies for data collection in the field with database and data processing techniques. The project's goal is to inform end users, such as farmers and agriculturists, on field data while also providing a basis for the development of objective assessments and recommendations. Finally, we discuss future research challenges towards the integration of new technological advancements, such as the use of Unmanned Aerial Vehicles (UAVs) for data gathering from remote areas and data analysis and prediction utilizing Machine Learning (ML) algorithms.

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Valorization of vine raw materials from North Aegean – The case of functional food ingredients

Michalaki Afroditi, Karantonis C. Haralabos. University of the Aegean

In North Aegean more than 27,000 acres of wine grapes are cultivated, leading to large quantities of grape pomace, rich in functional ingredients such as phenolics. Grape pomaces of three grape varieties were separated into grape skin and grape seed samples that were extracted by ultrasound assisted extraction. Gallic acid, catechin, chlorogenic acid, caffeic acid, vanillic acid, ferulic acid and daidzein were identified in grape skin samples by HPLC. Samples from muscat of Lemnos or Samos and Augoustiatis from Samos exerted higher antioxidant activities in seeds (94.8; 87.2; 66.6 mmol Trolox/g grape seed) compared to skin (14.3; 18.0; 46.1 mmol Trolox/g grape skin). Pomace of studied grape varieties could be utilized in the food industry as functional ingredients.

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Multi-omics applications in food products with geographic indication: the case of Greek dairy products

Spyros Didos, Maria Kyritsi, Foteini Triikka Sofia Michailidou, Anagnostis Argiriou. CERTH

Application of multi-omics approaches, integrating genomics, metagenomics, metatranscriptomics and metametabolomics, is used for characterizing the composition of food products along the food supply chain. Combination of such approaches allows us to define a sort of molecular labeling of food or biomarkers that are easily understandable by the operators involved in the food sector. In this context, we studied the microflora composition, activity levels, function and metabolic profile of Greek artisanal cheeses, at different stages of ripening. In this study, Greek cheeses made from sheep and/or goat milk in cottage industries located in different geographic regions, were analyzed. Bacterial and fungal community composition was assessed through sequencing of the 16S rRNA gene and the ITS spacer, respectively. Assessment of the activity levels of individual bacterial taxa and identification of the bacterial functions performed were evaluated through sequencing of the metatranscriptome. Concerning the metametabolome, we focused on the lipidomic analysis, performed through LC-MS/MS, because it can provide important information for enhancing food safety and quality assurance, the bio-function and nutrition levels of lipid species, and explore new kinds of functional lipids. The results of the metagenome, metatranscriptome and lipidomic analyses highlight the importance of the multi-omics approach applied in the evaluation and monitoring of cheese organoleptic characteristics, quality and safety at the different production and ripening stages. Moreover, multi-omics applications contribute to the improvement of the added value of Greek traditional cheeses and pave the way for the creation of new and/or improved (Greek) dairy products.

Pest management with precision farming tools: the case of the olive fly (*Bactrocera Oleae*)

Giorgos Katsikogiannis, Giorgos Stavrianakis, Stratis Sentas, Vyronas Ignatios Michalakis, Thomas Tscheulin, Dimitris Kavroudakis and Thanasis Kizos. University of the Aegean

The management of pests is an area where different objectives meet: the need to ensure that agricultural production covers the needs of a growing population, the need to ensure safety and low levels of health risks for people and the need to conserve wildlife and biodiversity are not always compatible. In this paper we present precision farming tools that are used to manage and control the most important pest of the olive tree, the olive fly (*Bactrocera Oleae*) at the landscape level. A geodatabase, linked to two android applications (one for recording insect populations in traps and one for recording spraying routes) and a WebGIS application, is used to monitor populations and design management options. System architecture is presented, along with findings from its application on Samos and Lesvos Islands. These tools can be used to monitor and predict population movement and changes.

Farm level management of input/outputs with precision farming tools and biodiversity impacts: evidence from mixed Mediterranean crops and livestock systems

Thanasis Kizos, University of the Aegean

Farm level management of input/outputs with precision farming tools and biodiversity impacts: evidence from mixed Mediterranean crops and livestock systems.

Young Urbanites' Seeking for an Alternative Life in The Turkish Aegean Countryside

Bahar Kaba, Ilay sudaş. Ege University.

During the recent decades, the countryside has become a desirable residential environment for an increasing number of people from Western societies who decide to translate their preferences into residential practices by moving from a town to a village (Rivera-Escribano & Mormont 2006). This creates a new type of mobility which is called as rural lifestyle migration (Benson 2013, Halfacree, 2014). As a country in transition, the wealthy urban population in Turkey has also similar urban life experiences and problems with the urban population tend to move away from the cities and towns to rural areas. In the case of Turkey, urban-rural migration is manifested especially in the form of settling in a village, mostly in the Aegean region, that is to say the western coastal zone of Turkey.

In this research, rural lifestyle migration and the profile and motivations of migrants were examined in the case of Muğla province of Turkey. The research is based on content analysis of the stories of migrants that were posted on the YouTube platform. The results indicated a relatively young migrant community, mostly earlier stages of their life course and married, quit their jobs in the big cities (such as Istanbul) to start a production-based alternative life in the Turkish Aegean rural region. Most of them escape from unlikeable features of big cities, negative feelings that result from the urban rush, too busy working conditions, and search for a new life in nature with the possibility of ecologic agricultural production and consumption and tranquillity. Besides natural attractions, for most of them, the rural is considered to offer a safer life for their children. Finding also showed that the Covid-19 pandemic emerged as a new motivator. Rural life conditions make a semi-outdoor life possible even under the conditions of a lockdown that makes the villages especially attractive. Gardens are open-air private properties that are a part of detached rural houses. It is an important pull factor because such houses allow spending time "out of the house" without entering public space that is to say spending time outside without wearing face masks in public which has always been obligatory in Turkey nearly since the beginning of the pandemic. The findings indicated the importance and attractiveness of the rural locations not only for those who find urban life conditions stressful and tiring in Turkish big cities but also how important such location can become a place of escape in emergent conditions.

Session Cultural Geography and Heritage

Challenges for teaching Cultural Heritage in Higher Education: spatial dimension and methodological approaches

Carmen García, Irene Sánchez, Juan Antonio García. University Castilla La Mancha

Cultural heritage, in its broadest sense as a product and as a process, due to its economic, symbolic, and identity meaning, is considered an important issue nowadays. The recent changes in society derived from the technological revolution, together with the adaptations that the Covid-19 pandemic has forced, undoubtedly affect the way in which the teaching-learning process in this field can be oriented in the future. This paper analyses the challenges facing the teaching of cultural heritage in Spain, derived from the possibilities offered by the technological revolution and its application difficulties, in relation to the demands of society. The research includes the results of a survey at the university level, carried out with the MINERVA project, to highlight the differences and shortcomings that, regarding the teaching of geotechnologies, are appreciated in this country, from the point of view of teachers. It is completed with the information obtained from the students, and with some of the tools that can be used to support teaching. Conclusions indicate the aspects that need to be addressed to achieve a paradigm shift in the teaching of cultural heritage. Among them, the enhancement of the spatial dimension in heritage studies stands out (García, 2017; García-González et al., 2021) (fostering spatial thinking and spatial literacy), as well as the application of new methodological approaches.

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García-González, J.A., Gómez-Gonçalves, A., Gómez-Trigueros, I. M., Binimelis, J. (2021): Geographic literacy in Spain with mental maps, *Journal of Geography in Higher Education*, DOI: 10.1080/03098265.2021.2001643

Cultural heritage studies as an applied transdisciplinary science through the integration of Geosciences. The MINERVA Project

Maria Pigaki, Margherita Azzari, Carmen García, L. Spini, Giorgio Barbato, Pierre Mazagol, E. Sempou. NTUA, Dipylon Society.

In the last 50 years, since 1972 when the UNESCO World Heritage Convention (WHC) was adopted by the UNESCO General Conference, there have been many developments in addressing cultural – both material and immaterial – heritage. All these programmes and conventions have shown the importance of interdisciplinary as well as transdisciplinary approach to the study of cultural heritage towards its conservation and sustainable management. Nonetheless the many courses, workshops, and centers of excellences which have been established (e.g., UNESCO Category 2 Centre: The International Centre on Space Technologies for Natural and Cultural Heritage [HIST] in China), less focus has been placed on paradigm shift in the education sector toward equipping students of cultural heritage with interdisciplinary and transdisciplinary approaches and tools which can further their understanding of cultural heritage through a different spatial perspective.

This shift entails not only integration of the theoretical basis of geosciences into the cultural heritage subjects, but also the inclusion of training in Geotechnologies (e.g., GIS, Drones); and therefore, a new learning model from spatial knowledge to an instrumental way of learning, opens new perspectives of gathering information on cultural heritage.

The Project MappINg Cultural Heritage. Geosciences VAlue in Higher Education" – hereinafter referred to as the MINERVA Project is based on transdisciplinary and cross-border tools that will be used to develop the efficiency of the learning approach in Cultural Heritage and Geosciences.

The architectural structure is developed around three main axes: a) a holistic approach linking the Humanities to the Geosciences in order to enhance spatial thinking; b) a new teaching resource is designed for graduate and postgraduate students, adjusted to a personalized learning approach; c) innovative teaching methods and resources in a structured course, providing a flexible and dynamic learning experience, specifically designed to provide Massive Open Online Courses (MOOC). Furthermore, the MINERVA Project is developed to address current circumstances and challenges, where effective distance learning and work tools, as well as electronic platforms, are required, also in line with the NextGeneration EU.

It is expected that by applying Geosciences to Cultural Heritage, students can better comprehend and deal with sophisticated contemporary issues thanks to the acquisition of new skills and to further understanding their subject matter and related problem solving.

Mapping Ancient Athens: A Digital Map to Rescue Excavations

George Lampropoulos, George Panagiotopoulos. Dipylon Society

The project Mapping Ancient Athens is about organizing and systematizing 160-years' archaeological documentation of the built environment of Athens. Our knowledge about the city's past is mainly based on specific archaeological sites and systematically excavated monuments, recognizable and thoroughly studied, such as the Acropolis, the Kerameikos, the Agora, and the Olympieion. Nevertheless, besides these open spaces there is another Athens, the invisible one where human activity has unfolded for four thousand years. Big excavations for public works and hundreds of smaller-scale interventions on private plots of land, brought to light important archaeological data to better understand the topographic relevance of the scattered ancient remains, the fabric of the ancient city and therefore its urban development. However, the spatial relationship among fragmentarily preserved remains is not easily recognizable, as sites have been excavated at random, making it difficult to reconstruct continuity of evidence and restore a possible history of the area. Dipylon Society addressed this issue by designing and implementing an interactive web map that pieced together in a geospatial database all the scattered architectural remains. The spatial dimension of these excavated remains and furthermore the image of the topography of ancient Athens was tried to render on a map, as accurately as possible, by using Geographic Information Systems. The digital map brings us closer to the past, albeit in fragments: one can wander in time and through several uses of space and explore classified features unconnected to each other at first glance.

The project was designed so as to tame the massive amount of archaeological material, to facilitate research, and at the same time to provide information to any interested citizen or visitor, hoping to raise the awareness among a general audience of the existing archaeological resources. The digital platform aspires to provide inspiration and solutions to researchers and professionals in the humanities, to cultural management and urban planning bodies, and to citizens and cultural associations. Furthermore, it can be used as a tool for teaching the history of Athens at various levels of education.

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"Escape through Culture": Develop escape games based on site-related literary texts to reach the "missing" visitors of cultural sites in the era of pandemic

Apostolia Galani, Elena Mantzari, Monica Gavrielidou, Maria Fountana, Spiros Papadopoulos, Aristides Vagelatos. National and Kapodistrian University of Athens

The COVID-19 pandemic led Culture to an unprecedented state of emergency, forcing the suspension of all cultural visits for more than a year. The need, therefore, arose to redefine the traditional ways of reaching the "missing" visitors. This paper presents the work implemented as part of the "Escape through Culture" prototype, a Greek General Secretariat of Research and Innovation (GSRI) funded project. This project aims to design and develop an innovative platform for digital escape games offering gamified experiences on site-related literary texts. The game is being developed for desktops and mobile devices utilizing augmented reality (AR), and it is an excellent example of how modern technologies may help foster the visitors' engagement in experiencing the places through literature in periods such as the pandemic.

The part of the prototype which is presented in this conference focuses on Eleusis, a place located in the West Attica Regional unit in Greece, timelessly connected to the history of ancient times (Eleusinian Mysteries, Greco-Persian wars) as well as to the history and culture of the modern Greek state (industrial state, military airport, Asia minor refugees' settlement, etc.). The paper will present the ecosystem of the desktop escape game and probe the following questions:

How can site-related literary texts contribute to a better understanding of a place?

Do site-related literary texts encourage the dialogue between the place and the visitors?

How can the remote visiting experience be augmented through such a platform?

How could a game platform help people "escape" in times of social distancing?

Training on the method of data acquisition, analysis, and visualization in the field of cultural heritage: a Tuscan case study

Margherita Azzari, P. Deguy, L. Dolfi, V. Bologna, C. Pappalardo, C. Berti. Università degli Studi di Firenze

Generally, courses of History, History of Art, Archaeology and Literature do not include specific courses in GIS and Remote Sensing and do not contribute to developing specific skills in spatial knowledge or digital representation. To respond to this shortcoming and within the MINERVA project (MappINg. Geosciences VALue in Higher Education, Erasmus + KA2), which aims to promote and develop innovative methods and tools for teaching geotechnology in higher education contexts, a training activity has been developed, based on the educational strategy of problem solving, applied to a Tuscan case study and focused on data acquisition, analysis and visualization. The coastal towers and fortresses are part of

the historical and architectural heritage of Tuscany. Over time, some of them have been destroyed, leaving traces only in archival documents and historical maps. For others, only the ruins remain or, as in the case of the Matilde Tower in Viareggio, restoration and renovation works have allowed them to be saved. The exercise aims to teach a methodology for the creation of a digital database using previous studies, archival documents, and field surveys. Starting from the principle that each tower had to be visible from two towers, the main objective of the exercise is to proceed with an analysis of intervisibility that allows us to hypothesise potential localization areas of the towers that have been destroyed today. This training activity, proposed to students in History, History of Art, Archaeology, and Literature, will allow them to acquire skills to carry out field surveys, but at the same time, to create, analyse and manage the data obtained in a GIS software. The present case study will be proposed to the students within a MOOC course, the outcome of the MINERVA project.

Session GI Pedagogies

GI Pedagogy: An innovative model using geoinformation for teaching about sustainability

Sophie Wilson, Luc Zwartjes, Michaela Lindner-Fally. St. Mary's University, EUROGEO

The aim of this presentation is to help teachers to develop the skills required to use GIS in the everyday geography classroom, in an innovative and effective way. This will be done by presenting the innovative pedagogical model and practical toolkit designed as part of Gi Pedagogy, the Erasmus+ project, which has brought together evidence from educational research and practical examples of teachers' best practice. The project's goal is to provide teachers, particularly trainee and early career teachers, with the skills and resources they need to teach with GIS in an innovative and effective way.

This presentation will outline a number of suitable case-study examples, linked to the Sustainable Development Goals, for teachers to adapt and use in their own Geography lessons, using the innovative pedagogical approaches developed as part of this project, to teach with GIS. This will introduce them to the online teacher training course currently being developed which starts with a brief introduction to what GIS is and why it should be used. This will be followed by an outline of the innovative pedagogy and theoretical basis for this, which is underpinned by Rosenshine's Principles of Instruction, and then a section on sequencing and integrating GIS in the curriculum. Using scaffolding, two case-studies will be used to illustrate examples of what good looks like, before concluding with an 'I - we - you' section on creating and sharing ideas.

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The effect of an open educational resource (OER) on student teachers' abilities to diagnose students' written argumentation skills

Kimberley Hindmarsh, Alexandra Budke. University of Cologne.

Argumentation competences are essential in order to participate in social discourse (Budke 2016). Teaching these skills is one of the aims of geography lessons (DGfG 2014). However, since pupils often find it difficult to produce correct, complete and convincing arguments (i.e. Chase 2011; Lytzerinou & Iordanou 2020; Uhlenwinkel 2015), there is a need for support from the teacher in developing these skills. In order to be able to support pupils individually in class, the teacher must first determine the pupils existing argumentation competences by an educational diagnosis. However, the determination of these skills in pupils has not yet been implemented in teacher education, resulting in the problem that teachers do not have sufficient competencies to recognize what exact problems individual

students have when writing an argumentation. These skills include the argumentative organization of the text through (technical) linguistic action schemata, linguistic and structural organization of the text, Material reference and the content quality of the argumentation (Budke et al. 2020). To date, there is neither a theoretical model nor a methodological tool for subject-specific diagnosis of argumentation skills. To address this gap in both research and development the study presented here, a diagnostic questionnaire was developed at the University of Cologne in Germany as a didactic tool for geography teacher education in an open educational resource (OER) (https://www.ilias.uni-koeln.de/ilias/goto_uk_pg_313837_4466398.html). There this OER was used and evaluated in a seminar with geography education students. The study showed that the students were mostly able to use the diagnostic sheet correctly and to apply it competently. The results of the evaluation also showed a high level of acceptance of the OER and a good rating of the diagnostic sheet by the students, especially due to its practical relevance.

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Open Education as a support to Sustainable Development Goals

Tijana Ilic, Tanja Urbančič, Veronika Dolar, Anja Polajnar. University of Nova Gorica.

In 2017 University of Nova Gorica (UNG) and UNESCO Chair on Open Education Resource (OER) at Jozef Stefan Institute developed and launched an international online mentoring program “Open Education for a Better World” (OE4BW) to support and implement OER with social impact according to Sustainable Development Goals (SDGs). In 2020, as an upgrade of OE4BW, in cooperation with UNESCO Chair on OER and international experts, UNG established a unique master's degree study program “Leadership in Open Education” (LOE) with aim to ensure more flexibility, accessibility and sustainability in empowering next-generation of leaders in open education. Purpose of this practice-oriented program is to start a continuous, discipline-critical support on educational sustainability and to unlock potential of future education leaders in achieving SDGs. Both, OE4BW participants and LOE students consistently report about very good experience with these programs and have demonstrated big advancement through their growing capacity for supporting SDGs through open education. This has been proven also by numerous concrete open educational resources and activities they have implemented with the guidance of mentors from both presented programs.

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- European Journal of Geography, <http://www.eurogeographyjournal.eu/> (Instructions for authors: http://eurogeographyjournal.eu/index.php?func=page&page_id=45) (Indexed in Scopus, Scimago Journal & Country Rank).

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