	Wednesday, 16.09.20 14:00 – 15:30 (Austrian time) Session 1 (1,5 h)	Thursday, 17.09.20 10:00 – 11:00 (Austrian time) Session 2 (1 h)	Thursday, 17.09.20 14:00 – 15:30 (Austrian time) Session 3 (1,5 h)	Friday, 18.09.20 09:00 – 10:30 (Austrian time) Session 4 (1,5 h)
Zoom Room WG1	*The teaching landscape in the digital age* *Research related to pre-service teachers' practices and learning* Chair: Alison Clark-Wilson **Part 1: The teaching landscape in the digital age** 14.00 - 14.20 Helena Rocha, Eleonora Faggiano and Federica Mennuni - Teachers as task designers in the digital age: teaching using technology 14.20 - 14.40 Andreas Datzmann, Johannes Przybilla, Matthias Brandl and Tobias Kaiser - New teaching techniques aiming to connect school and university mathematics in geometry 14.40 - 15.00 Martha J Koch, Jere Confrey, Ellen Jameson and Alison Clark-Wilson - Facilitating the design and enactment of mathematics curricula through digital mapping	*Research related to pre-service teachers' practices and learning* Chair: Ornella Robutti 10.00 - 10.20 Elena Commodari, Santo Di Nuovo, Maria Flavia Mammana and Eugenia Taranto - Liceo matematico in Catania: a first analysis on teachers' professional development 10.20 - 10.40 Per G Østerlie - A commognitive approach for teaching functions: The discursive change of pre-service teachers in a technology-rich environment 10:40 – 11:00 Discussion of emerging themes	*Research related to in-service teachers' practices, affect and professional learning* Chair: Osama Swidan 14.00 - 14.20 Jana Trgalova and Michal Tabach - Bi-national survey on mathematics teachers' digital competences 14:20 – 14:40 Jens Krummenauer, Sebastian Kuntze, Marita Friesen, Ceneida Fernndez, Lulu Healy, Pedro Ivars, Salvador Llinares, Libuše Samkov and Karen Skilling - Developing a digital tool for vignette-based professional development of mathematics teachers – the potential of different vignette formats 14:40 – 15:00 Giorgos Psycharis and Charlotte Krog Skott - Studying mathematics teachers' documentational and identity	*Mathematics and computational thinking* *Research related to in-service teachers' practices, affect and professional learning* Chair: Alison Clark-Wilson **Part 1: Mathematics and computational thinking** 09:00 – 09:20 Rune Herheim and Elena Severina - Scratch programming and student's explanations 09:20 – 09:40 Camilla Finsterbach Kaup - Examining educational staff's expansive learning process, to understand the use of digital manipulative artefacts to support the students' computational thinking and mathematical understanding **Part 2: Research related to pre-service teachers' practice and learning**

	Part 2: Research related to pre-service teachers' practices and learning 15:00 – 15:20 Federica Mennuni and Eleonora Faggiano - Math education master students focusing on teaching mathematics with digital resources 15.20 - 15.30 Discussion of emerging themes.		trajectories over time 15.00 - 15.30 Discussion of emerging themes.	09:40 – 10:00 Alain Kuzniak, Assia Nechache and Jesus Victoria Flores Salazar - Student teachers' geometric work and flexible use of digital tools 10.00 - 10.30 Discussion of emerging themes
Zoom Room WG2	***Combining multiple digital and non-digital tools and resources*** **Chair: Jana Trgalova** 14.00 - 14.20 Maria Fahlgren and Mats Brunström - Student responses as a basis for whole-class discussions in technology-rich environments 14.20 - 14.40 Birgit Pepin and Zeger-Jan Kock - Student use of mathematics resources in Challenge-Based Learning versus traditional courses 14.40 - 15.00 Ana Donevska-Todorova and	***Technology supported development of specific skills*** **Chair: Jana Trgalova** 10.00 - 10.20 Eileen Baschek and Christof Schreiber - PrimarWebQuest for content and language integrated learning classes 10.20 - 10.40 Ben Haas, Yves Kreis and Zsolt Lavicza - Fostering process-related skills with the educational technology software MathemaTIC in elementary school 10.40 - 11.00 Ingi Heinesen Højsted - A	***Mobile technology in math education from student's and teacher's perspective*** **Chair: Melih Turgut** 14.00 - 14.20 Ulrich Kortenkamp, Heiko Etzold, Kevin Larkin, Silke Ladel and Laura Abt - Impact of place value chart app on students' understanding of bundling and unbundling 14.20 - 14.40 Simon Barlovits, Moritz Baumann-Wehner and Matthias Ludwig -Curricular learning with MathCityMap: creating theme-based math trails	***Digital technology in teaching functions and calculus*** **Chair: Niels Grønbaek** 09:00 – 09:20 Susanne Digel and Jürgen Roth - A qualitative-experimental approach to functional thinking with a focus on covariation 09:20 – 09:40 Yael Levy, Otman Jaber, Osama Swidan and Florian Schacht - Learning the function concept in an augmented reality-rich environment 09:40 – 10:00 Edith Lindenbauer - A digital worksheet for diagnosing and

	Diego Lieban - Fostering heuristic strategies in mathematical problem solving with virtual and tangible manipulatives 15.00 - 15.20 Renáta Vágová, Mária Kmetová and Zsolt Lavicza - Designing multiple manipulatives to explore cube cross-section 15.20 – 15.30 Discussion of emerging themes	"toolbox puzzle" approach to bridge the gap between conjectures and proof in dynamic geometry	14.40 - 15.00 Ana Barbosa and Isabel Vale - Preservice teachers' perceptions on outdoors education using a digital resource 15.00 - 15.20 Isabel Vale and Ana Barbosa - Outdoor photography: a resource in teacher training 15.20 – 15.30 Discussion of emerging themes	enhancing students' conceptions in functional thinking 10.00 - 10.20 Reinhard Oldenburg - An investigation on the use of Geogebra in university level calculus 10.20 – 10.30 Discussion of emerging themes
Zoom Room WG3	*Design and redesign of digital tasks* Chair: Bärbel Barzel 14.00 - 14.20 Annalisa Cusi and Agnese I. Telloni - Re-design of digital tasks: the role of automatic and expert scaffolding at university level 14.20 - 14.40 Myrto Karavakou and Chronis Kynigos - Designing periodic logos: a programming approach to understand trigonometric functions 14.40 - 15.00 Camilo Sua, Angel Gutiérrez and	*Assessment II* Chair: Michal Tabach 10.00 - 10.20 Said Hadjerrouit and Nils Kristian Hansen - Challenges encountered in mathematical Problem-Solving through computational Thinking and Programming Activities 10.20 - 10.40 George Kinnear, Ian Jones and Chris Sangwin - Towards a shared research agenda for computer-aided assessment of university mathematics 10.40 - 11.00 Discussion of emerging themes.	*Design and use of digital environments* Chair: Annalisa Cusi 14.00 - 14.20 Eirini Geraniou and Cosette Crisan - The design principles of an online professional development short course for mentors of mathematics teachers 14.20 - 14.40 Janet Winzen and Karina Höveler - 'Kombi' – A digital tool for solving combinatorial counting problems: theoretical funding of and empirical results on central design principles	*Impact of technology on curriculum* Chairs: Ana Donevska-Todorova and Jana Trgalova 09:00 – 09:20 Petra Hendrikse, Ria Brandt and Victor Schmidt - New curricular goals and new digital learning tools: conflicting or mutually reinforcing developments? 09:20 – 09:40 Morten Misfeldt, Uffe Thomas Jankvist, Eirini Geraniou and Kajsa Bråting - Relations between mathematics and programming in school: juxtaposing three different cases

	Adela Jaime - Design criteria of proof problems for mathematically gifted students 15.00 - 15.20 Sonia Palha and Daan van Smaalen - Eliciting students' thinking about change: filling a vase in a computer application 15.20 – 15.30 Discussion of emerging themes		14.40 - 15.00 Carlotta Soldano and Osama Swidan - The logic of inquiry when using augmented reality 15.00 - 15.20 Lui A. Thomsen and Morten Elkjær - Equation Lab: Fixing the balance for teaching linear equations using Virtual Reality 15.20 – 15.30 Discussion of emerging themes	09:40 – 10:00 Stefan Pohlkamp and Johanna Heitzer - Citizen empowerment in mathematics curriculum: design of exemplary digital learning environments 10.00 – 10.30 Discussion of emerging themes
Zoom Room WG4	*Assessment I* Chair: Hans-Georg Weigand and Paola Iannone 14.00 - 14.20 Alice Lemmo - From paper and pencil- to Computer-based assessment: an example of qualitative comparative analysis 14.20 - 14.40 Guido Pinkernell - Digital feedback design in the Heidelberger MatheBrücke 14.40 - 15.00 Lena Frenken, Paul Libbrecht, Gilbert Greefrath, Daniel Schiffner and Carola Schnitzler - Evaluating Educational Standards	***Theoretical and methodological aspects concerning programming*** Chairs: Eleonora Faggiano and Niels Grønbaek 10.00 - 10.20 Andreas Borg, Maria Fahlgren and Kenneth Ruthven - Programming as a mathematical instrument: the implementation of an analytic framework 10.20 - 10.40 Chantal Buteau, Eric Muller, Marisol Santacruz Rodriguez, Ghislaine Gueudet, Joyce Mgombelo and Ana Isabel Sacristán - Instrumental orchestration of using	***Researching on technologies as mediators*** Chairs: Eleonora Faggiano and Mariam Haspekian 14.00 - 14.20 Cecilie Carlsen Bach and Angelika Bikner-Ahsbahs - Students' experiences with dynamic geometry software and its mediation on mathematical communication competency 14.20 - 14.40 Rikke Maagaard Gregersen and Anna Baccaglini-Frank - Developing an analytical tool of the processes of justificational mediation	***Theoretical and methodological aspects concerning the learning enviornment*** Chairs: Eleonora Faggiano and Ghislaine Gueudet 9.00 - 9.20 Mette Andresen - To learn about differential equations by modelling 9.20 - 9.40 Veronica Hoyos, Estela Navarro and Victor J. Raggi - Hybrid environments of learning: potential for student collaboration and teacher efficiency

	using Assessment “with” and “through" Technology 15.00 - 15.20 Filip Moons and Ellen Vandervieren - Semi-automated assessment: the way to efficient feedback and reliable math grading on written solutions in the digital age? 15.20 - 15.30 Discussion of emerging themes	programming for mathematics investigations 10.40 - 11.00 Discussion of emerging themes	14.40 - 15.00 Canan Güneş - The semiotic potential of Zaplify: a touchscreen technology for teaching multiplication 15.00 - 15.20 Marianne Thomsen and Uffe Thomas Jankvist - Reasoning with digital technologies - counteracting students’ techno-authoritarian proof schemes 15.20 - 15.30 Discussion of emerging themes	9.40 - 10.00 Elena Naftaliev - The social development of knowledge in a new pedagogical setting: the same activity presented as three different interactive diagrams 10.00 - 10.20 Hendrik Van Steenbrugge, and Janine Remillard - Digital curriculum resources’ connectivity: an attempt to conceptualization 10.20 - 10.30 Discussion of emerging themes