

International Conference on Technology in Mathematics Teaching 13
Lyon, 3-6 July 2017
<https://ictmt13.sciencesconf.org/>

Third announcement

We invite you to participate at the 13th International Conference on Technology in Mathematics Teaching that will be held July 3-6, 2017 in the beautiful city of Lyon, the third largest in France.



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ICTMT 13 scientific committee

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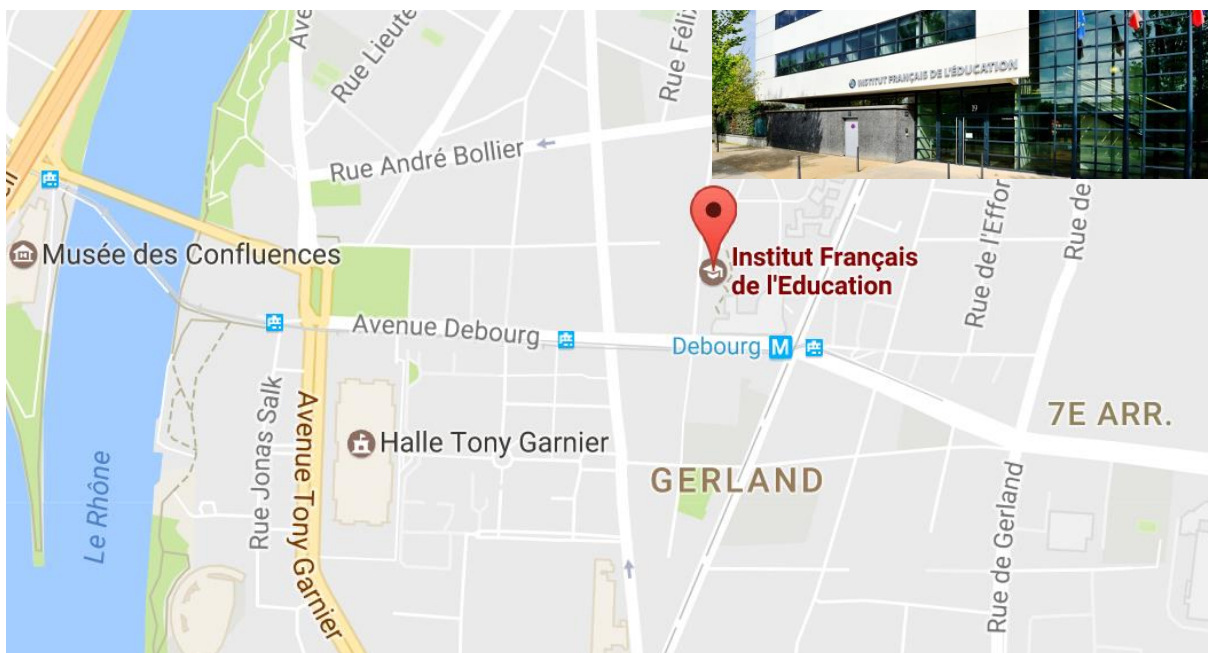
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Venue

ICTMT 13 will take place at the [French Institute of Education](#) (Institut Français de l'Éducation - IFE) of the [Ecole Normale Supérieure](#) of Lyon. The Ecole Normale Supérieure de Lyon is situated in the Gerland area of the 7th district of Lyon, near the Pont Pasteur bridge on the left bank of the Rhône. The IFÉ building is located at 19, allée de Fontenay, on the west side of the René Descartes campus.



Scientific activities

Plenary speakers

- **John Monaghan** (University of Agder, Norway; University of Leeds, England) and **Luc Trouche** (Ecole normale supérieure de Lyon): *Using tools for doing mathematics vs. using tools for teaching mathematics, differences and similarities*

Drawing from the experience of writing a book with a research mathematician (*), we will highlight the variability of tool use for achieving a mathematical task, depending on the user and on the finality of the activity encompassing this task. This reflection will lead us to evidence some conditions for a fruitful use of tools in the context of learning/teaching mathematics.

(*) Monaghan, J., Trouche, L., & Borwein, J. (2016). *Tools and mathematics, instruments for learning*. Springer.

- **Chronis Kynigos** (University of Athens, Greece): *Designing for mathematical meaning-making: a case for integrating theories, concepts, digital resource affordances, and teacher roles*

The talk will address a common thread in four distinct issues relevant to the task of designing learning environments for mathematical meaning making with the use of digital media: that is, the challenge and the value of integrated approaches. With respect to theory, a case will be shown where Boundary Crossing was complementary to Documentational Genesis to understand teachers' collaborative designs for constructionist mathematics. Vergaud's 'conceptual fields' construct will be reconsidered as a tool for embedding integrated concepts in digital artefacts. With respect to technologies three cases will be shown integrating programmable math with dynamic manipulation with MaLT-Turtlesphere, repository architectures with re-mixing of micro-experiments with the Greek Photodendro portal, e-book stories with constructionist widget instances using the M C Squared project c-book technology. Finally, new roles for mathematics teachers will be considered in diverse communities of interest, i.e. CoI rather than CoP, collaboratively designing digital resources.

- **Paul Drijvers** (Freudenthal Institute, Utrecht University and Cito, a Dutch testing and assessment institute): *Digital assessment of mathematics: issues, opportunities and criteria*

Over recent years, digital assessment of mathematics has become quite common. Large scale tests such as PISA and TIMSS are, or are planned to be, administered online. From a mathematics didactics point of view, however, it is not self-evident that digital assessment is a step ahead compared to traditional paper-and-pencil assessment. In this presentation we will address some issues and opportunities, and identify criteria for authentic digital assessment of mathematics. These ideas will be illustrated with examples from an online diagnostic test in the Netherlands.

- **Ana Isabel Sacristan** (Cinvestav-IPN, Mexico): *Technological innovations in schools: the gap between theory and practice*

Over the past 30 years, many proposals have been made for technological implementations in mathematics education. In particular, I will focus here on the constructionist paradigm, and discuss the difficulties of putting into practice in schools, the theoretical ideas and proposals, some of which may have been successful in experimental situations, into real-life school environments.

Round table

Baerbel Barzel (University of Essen, Germany), **Monica Panero** (IFÉ-ENS, Lyon, France and INVALSI, Italy), **Cristina Sabena** (University of Turin, Italy), **David Wright** (University of Newcastle, UK) and **Gilles Aldon** – moderator (IFÉ-ENS, Lyon, France): *Formative assessment and technology*

FaSMEd is a design research project in science and mathematics education. The focus is on supporting teachers in the use of formative assessment, supported by the use of technology, with low achieving students. During this panel, the results of the work done in different countries (France, Germany, Italy, UK) will be presented and particularly, the theoretical framework of FaSMEd which takes into account three main dimensions that make it possible to characterize and analyze technology enhanced formative assessment processes.

Communications

65 communications have been accepted for presentation at the conference, among which

- 45 papers (see Appendix 1 and <https://ictmt13.sciencesconf.org/resource/page/id/14>),
- 12 posters (see Appendix 2 and <https://ictmt13.sciencesconf.org/resource/page/id/15>),
- 10 workshops (see Appendix 3 and <https://ictmt13.sciencesconf.org/resource/page/id/13>).

Conference program

Note: Detailed timetable is available on the conference website.

	Monday July 3rd	Tuesday July 4th	Wednesday July 5th	Thursday July 6th		
8:00-8:30	Registration 8:00-10:30					
8:30-9:00			Plenary 3 FaSMED panel 8:30-9:30			
9:00-9:30		Plenary 2 C. Kynigos 9:00-10:00	Poster session 9:30-10:30	Communications 4 9:00-10:30		
9:30-10:00		Coffee break 10:00-10:30				
10:00-10:30			Coffee break 10:30-11:00	Coffee break 10:30-11:00		
10:30-11:00	Opening ceremony 10:30-11:30	Communications 2 10:30-12:00	Coffee break 10:30-11:00	Coffee break 10:30-11:00		
11:00-11:30			Communications 3 11:00-12:30	Plenary 5 A. I. Sacristan 11:00-12:00		
11:30-12:00	Plenary 1 J. Monaghan & L. Trouche 11:30-12:30			Closing ceremony 12:00-12:30		
12:00-12:30		Lunch 12:00-14:00				
12:30-13:00	Lunch 12:30-14:00			Lunch 12:30-14:00		
13:00-13:30			Lunch 12:30-14:00	Lunch 12:30-14:00		
13:30-14:00						
14:00-14:30	Communications 1 14:00-15:30	Excursions	Workshops 2 14:00-16:00	"Local" social event 14:00-18:00		
14:30-15:00						
15:00-15:30	Coffee break 15:30-16:00					
15:30-16:00						
16:00-16:30	Workshops 1 16:00-18:00		Coffee break 16:00-16:30			
16:30-17:00						
17:00-17:30			Plenary 4 P. Drijvers 16:30-17:30			
17:30-18:00						
18:00-18:30						
18:30-19:00						
19:00-19:30			Conference diner From 19:00			
19:30-20:00						

Registration

The Conference Registration Fee includes participation, conference material, welcome reception, lunch, coffee breaks, conference dinner and excursion. The accompanying person will have admittance to the welcome reception, the excursion and the conference dinner.

	Regular delegate	Student *	Accompanying person
Normal fee Before May 15, 2017	350 €	320 €	100 €
Late fee	400 €	350 €	100 €

* Upon presentation of a proof of the university

Virtual participation

Persons who are interested in the conference events but are unable to attend in person will have the opportunity to follow plenary talks, communication presentations or workshops thanks to one or two [telepresence robots](#) that will be available during the conference. The remote participant will only need to download a corresponding application. The connection will be tried out with all remote participants a couple of days before the conference.

If you wish to attend virtually one or more conference events, plenaries (P), communications (C) or workshops (W), please apply for by filling the doodle (link below). You will need to motivate your application by writing a comment (e.g., you are co-author of the presented paper...).

Link to the doodle: <https://doodle.com/poll/9cygcnhh8h6x7c59>



Social events

Besides rich and interesting conference program, we are preparing exciting excursions to enable you to discover history, traditions and beauty of the city of Lyon on the one hand, and mathematical competitions to engage in individually, in pairs or groups. Finally, you will be invited to an exhibition of magic and mathematics to end on a fun note.

Excursions

Visit of the old city (Croix Rousse and the history of silk workers)



The Croix-Rousse district is nicknamed “the Village” for the quality of life it offers to its population. Attached to Lyon in 1852, this old faubourg has kept its authenticity and unique features. The main street and the busy shopping streets, two food markets opened 6 days a week, and many welcoming and quality restaurants definitely make this district a warm place where it’s good to live. Transformed during the 19th century with the arrival of the “Canuts”, who were gold, silver and silk weavers, the hill remains deeply marked by the work of the ‘Grande Fabrique’. The Plateau de la Croix-Rousse also offers great views over the city of Lyon and the Rhône-Alpes region.

Visit of the Saint Jean district (Renaissance district)

The Saint Jean District situated in the Old Town of Lyon at the foot of the Fourvière hill is the town's most famous district housing among others the renowned Saint Jean's Cathedral. The district can be discovered best by following the "traboules" which are unique passages leading from one street to another by crossing medieval courtyards. Once you have dived into its historical atmosphere, you will understand why this part of Lyon is a UNESCO world heritage site.



Visit of the 'Lumière' museum

For cinema-lovers, this is where it all began. The Cinématograph was born rue du Premier-Film, in the heart of Lyon's Monplaisir neighborhood, where only the factory shed "le Hangar" and the majestic Villa Lumière today remain. The Musée Lumière pays homage to Louis and Auguste Lumière and showcases their finest discoveries in the elegant setting of the family home with its richly crafted ceilings, monumental staircase and winter garden glass roof.



Visit of the Confluence museum



Situated on the confluence of the Rhône and the Saône, the Musée des Confluences is an absolute must-see in Lyon. Set in the heart of a monumental structure of metal and glass, the Musée des Confluences presents a journey through time and across continents to observe the world around us. Unmissable in Lyon, the Musée des Confluences tells the story of mankind and the history of life. Unprecedented in the world of European museums, it sets up a

dialogue between all the sciences to better understand the world.

Competitions

Five competitions that will run all over the conference will enable to measure your mathematical creativity. On Thursday, July 6th, during the closing ceremony, prizes will be awarded to the most creative participants of these conference long competitions.

Imaginary is a hands-on exhibition of interactive mathematics. Creativity related to functions will be the focus of this exhibition: real functions with "dancing like a function", surfaces with the software "Surfer", and analytic functions with "the [conformal webcam](#)". You will be able to interact with the three exposed devices and compete for the most creative participation in each case.

The **DIVIZIR** contest is an online competition with the [TQuiz](#) game running on computers, tablets and smartphones. In this game, numbers are falling in a Tetris-like way and you have to put them in the right cell according to divisibility by 3 and 9. The difficulty and the speed increase little by little. The game will be accessible 24h per day during the conference. The best score will determine the winner of the competition.

Math Trail. The garden of the [École Normale Supérieure](#) is a very unique creation. Let's open a mathematical eye on it! And let the technology help us! And let's have fun! This is possible through the use of the mobile app' [MathCityMap](#). You can download it on your smartphone, it will let you browse through the questions that you can answer and have a feedback. You got it right? Good, choose a next one!

Magimatique exhibition

To end the conference on a playful note, you will be able to assist, on Thursday afternoon, to an unprecedented exhibition mixing magic and mathematics in an amazing way. A spectacle and a playful and interactive course leave a big place to the game and the experimentation (optical illusions, giant magic squares, card tricks ...). All the "tricks" that are usually well kept will be revealed to you...



ICTMT 13 sponsors

We are proud being supported by the following organizations, many thanks to them:

Ecole normale supérieure de Lyon



Université Claude Bernard – Lyon 1



Institut Français de l'Éducation



**Faculté des Sciences et Technologies,
Université Claude Bernard – Lyon 1**



S2HEP – EA4148



EducTice



Springer



Casio



Appendix – Accepted contributions

1. Papers

Assessment	
Annalisa Cusi, Francesca Morselli, Cristina Sabena	A, B or C? The role of polls in promoting formative assessment in a connected classroom environment
Michael Mc Cabe	25 Years of e-assessment and beyond: how did I do!
Shai Olsher, Michal Yerushalmy	Making good practice common practice by using computer aided formative assessment
Hana Ruchniewicz	Can I sketch a graph based on a given situation? – Developing a digital tool for formative self-assessment
Curriculum	
Irina Gurevich, Mercedes Barchilon Ben-Av	The impact of technology use on the curriculum of the course "Plane transformations in geometry": a self-study
Mariam Haspekian	Computer science in mathematics' new curricula at primary school: new tools, new teaching practices?
Elena Naftaliev	Interactive diagrams used for collaborative learning
Hans-Georg Weigand	Competencies and digital technologies - reflections on a complex relationship
Teacher	
Gilles Aldon, Ferdinando Arzarello, Monica Panero, Ornella Robutti, Eugenia Taranto, Jana Trgalová	MOOC for mathematics teacher training: design principles and assessment
Chiara Andrà, Domenico Brunetto, Igor Kontorovich	There is more than one flipped classroom
Gulay Bozkurt, Kenneth Ruthven	Teaching with Geogebra: resource systems of mathematics teachers
Alison Clark-Wilson, Celia Hoyles	Planning to teach lower secondary mathematics with dynamic mathematical technology: quality features of lesson plans
Wajeeh Daher, Nimer Baya'a, Ahlam Anabousy, Rawan Anabousy	Pre-service teachers' preparation as a catalyst for the acceptance of digital tools for teaching mathematics and science
Ana Donevska-Todorova, Melih Turgut	Looking at compositions of reflections in a DGE from thinking modes and semiotic perspectives
Houssam Kasti, Murad Jurdak	Effect of Geogebra collaborative and iterative professional development on in-service secondary mathematics teachers' TPACK
Katiane de Moraes Rocha, Chongyang Wang, Luc Trouche	Documentation expertise and its development with documentational experience in collectives: a French case of collective lesson preparation on algorithmic
Gerson Oliveira	Geogebra and numerical representations: a proposal involving fundamental theorem of arithmetic
Helena Rocha	Analysing the teacher's knowledge for teaching mathematics with technology
Ali Simsek	A case study of a secondary school mathematics teacher's classroom practice with web-based dynamic mathematical software
Michal Tabach, Jana Trgalová	In search for standards: teaching mathematics in technological environment
Michael Uameh, John Monhagan	A classification of resources used by mathematics teachers in an English high school

Students	
Ahlam Anabousy, Michal Tabach	Students' expanding of the Pythagorean theorem in a technological context
Anna Baccaglioni-Frank, Nathalie Sinclair	Surprise-driven abductions in DGEs
Nimer Baya'a, Wajeeh Daher, Samah Mahagna	The effect of collaborative computerized learning using Geogebra on the development of concept images of the angle among seventh graders
Lisa Göbel, Bärbel Barzel, Lynda Ball	“Power of Speed” or “Discovery of Slowness”: Technology-assisted Guided Discovery to Investigate the Role of Parameters in Quadratic Functions
Iwan Gurjanow, Matthias Ludwig	Gamifying math trails with the MathCityMap app: impact of points and leaderboard on intrinsic motivation
Corinna Hertleif	Dynamic Geometry Software in Mathematical Modelling: About the Role of Programme-related Self-Efficacy and Attitudes Towards Learning with the Software
Elena Jedtke	Feedback in a computer-based learning Environment about quadratic functions: Research design and Pilot study
Giulia Lisarelli	Exploiting potentials of dynamic representations of functions with parallel axes
Valentina Muñoz-Porras, Teresa Rojano	Algebra structure sense in a web environment: design and testing of the expression machine
Iman Osta, Madona Chartouny , Nawal Abou Raad	Reasoning strategies for conjecture elaboration in DGE
Petra Surynkova	Central and parallel projections of regular surfaces: geometric constructions using 3D modeling software
Candas Uygan, Melih Turgut	Spatial–semiotic analysis of an eighth grade student's use of 3D modelling software
Innovation	
Marina De Simone, Hamid Chaachoua	The transposition of counting situations in a virtual environment
Justin Dimmel, Camden Bock	Handwaver: a gesture-based virtual mathematical making environment
António Domingos, Ana Santiago, Cláudia Ventura et al.	Monitoring a technological based approach in mathematics in Portugal - the case of Khan academy
Mohamed El-Demerdash, Jana Trgalová, Oliver Labs, Christian Mercat	Teaching locus at undergraduate level: a creativity approach
Theo Van Den Bogaard, Paul Drijvers, Jos Tolboom	The design and use of open online modules for blended learning in STEM teacher education
Software and applications	
Eleonora Faggiano, Antonella Montone, Michele Giuliano Fiorentino, Maria Alessandra Mariotti	An interactive book on axial symmetry and the synergic use with paper and pin
Verônica Gitirana et al.	Students' covariational reasoning: a case study using Function Studium software
Magdalena Kobylanski	WIMS Www Interactive Multipurpose Server an interactive exercise software that has 20 years and still is at the top
Pedro Lealdino	Function hero: an educational game to afford creative mathematical thinking
Samet Okumus	(Un)intended representations in dynamic geometry software: pedagogical considerations
Ittay Weiss	Incorporating LyX as standard tool for writing mathematics - effects on teaching and learning

2. Posters

Maha Abboud, Franck Salles, Nathalie Sayac	The use of computer based assessment PISA 2012 items in mathematics class: students' activities and teachers' practices
Giulia Bini	Augmented log: using AR technology to construct learning about logarithms and exponentials
Rogier Bos	Structuring hints and heuristics in intelligent tutoring systems
Maria Cristina Costa, Antonio Domingos	Technology as a resource to promote interdisciplinarity in primary schools
Ana Donevska-Todorova, André Henning, Katja Eilerts, Tobias Huhmann	Technology supported primary school teachers' knowledge in geometry. Analysis through a triple-tetrahedral model
Sam Duffy, Sara Price, Gualtiero Volpe et al.	WeDRAW: Using multisensory serious games to explore concepts in primary mathematics
Maria Fahlgren, Mats Brunström	Designing tasks that foster mathematically based explanations in a dynamic software environment
Mutfried Hartmann, Borys Thomas, Vincenzo Fracapane	Mobilizing and transforming teacher education pedagogies (MTTEP) – learning statistics with tablets
Thomas Janßen, Tanja Döring	Boundary objects in interdisciplinary research on multimodal algebra learning
Sonia Palha, Stephan Koopman	Learning with Interactive Virtual Math in the classroom
Maximilian Pohl, Florian Schacht	Digital mathematics textbooks: analysing structure and student uses
Ottavio Rizzo	Bringing appropriate mental images to the foreground using dynamic geometry as a semiotic mediator: when is a rectangle a rectangle?
Fernando Luís Santos, António Domingos	Mathematics in pre-service teacher education and the quality of learning: an experience with paper planes, smartphones and Geogebra
Manuela Subtil, António Domingos	The graphing calculator in the development of the mathematics curriculum in the 7 th grade of basic education

3. Workshops

Damir Buskulic	Practicing WIMS : hands-on training
Alison Clark-Wilson Richard Noss, Celia Hoyles	Blending computational and mathematical thinking in primary education: The ScratchMaths Project in England
Francesca Ferrara, Giulia Ferrari	Moving, comparing, transforming graphs: a bodily approach of functions
Sandra Gaspar Martins, José Matos, João Sousa, Lucía Suárez	Mathematics for graphics computing: students learn Algebra and program Python to create a project where they make Algebra create a scenario's photo
Zoltán Kovács, Tomás Recio, Philippe R. Richard, M. Pilar Vélez	GEOGEBRA Automated reasoning tools: a tutorial with examples
Pedro Lealdino, Christian Mercat	MATHMAGIC: the encounter between computational and mathematical thinking
Jean-François Nicaud, Christophe Viudez	Dynamic algebra and other Aristod math applications
Osama Swidan, Ferdinando Arzarello, Silvia Beltramino	Dynamic technology for simulating a scientific inquiry for learning - teaching pre-calculus concepts
CASIO	Teaching algorithmic with calculators