SHARING INSPIRATION 2019

THE POWER OF REALIZATION

Teachers Teaching with Technology™

Sharing Inspiration 2019: The Power of Realization *…for Educators*

Conference Program

Crowne Plaza, Rue Gineste 3, 1210 Brussels, Belgium
2019, March 29-31

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Sharing Inspiration 2019: The Power of Realization

Sharing Inspiration is a biennial conference format of an educator network named T³ Europe [T-cubed]. The conference focusses on sharing best practices across Europe regarding curriculum aligned STEM education.

Sharing Inspiration 2019 will be held over 4 days in total:

- The first day (Thursday March 28) is specifically designed for policy makers, industry stakeholders, key decision makers and leading educators.
- Day 2 to 4 are designed for educators and teacher trainers. From Friday March 29 to Sunday March 31, around 180 T³ instructors from Europe, Australia and US and guests from befriended organizations will meet for 3 days and exchange ideas in various presentation and workshop formats on math, science and STEM education.

Conference part for Educators
Day 2 to 4 March 29 to March 31 2019

Conference Outline

Sharing Inspiration 2019 …for educators contains multiple opportunities to exchange:

- Keynote: talks in plenary
- Presentation: 1.0 hour informative presentations
- Workshop: 1.5 hours guided exchange and hands-on experience
- Discussion Group: Interactive 3 hour exchange and deep-dive
- Playground: Play stations in an informal atmosphere
- Free Interaction: Networking in casual atmosphere

From	To	Fri Mar 29	Sat Mar 30	Sun Mar 31
08:00	08:30		Free Interaction	Free Interaction
08:30	09:00			
09:00	09:30		Discussion Group (1)	Presentation (1.0h)
09:30	10:00			
10:00	10:30			Presentation (1.0h)
10:30	11:00		Break	
11:00	11:30	Arrival	Discussion Group (1) - cont.	
11:30	12:00			Prezi: STEM in Practice Study
12:00	12:30	Lunch		Keynote: Research on STEM
12:30	13:00		Lunch	Close
13:00	13:30			Lunch
13:30	14:00	Intro & Key Note		
14:00	14:30		Discussion Group (2)	Departure
14:30	15:00	Break		
15:00	15:30	Workshop (1)		
15:30	16:00		Break	
16:00	16:30		Discussion Group (2) - cont.	
16:30	17:00	Break		
17:00	17:30	Workshop (2)		
17:30	18:00		Free Interaction	
18:00	18:30			
18:30	19:00	Free Interaction		
19:00	19:30		Brussels	
19:30	20:00	Playground		
20:00	20:30			
20:30	21:00			
21:00	21:30			
21:30	22:00	Free Interaction		

Conference Opening

Room Ballroom
Date/Time Friday Mar 29, 13.30 – 14.30

\# O1
Moderator *Stephan Griebel (Texas Instruments)*
Title ***Welcome***

\# O2
Moderator *Dr. Peter Balyta (Texas Instruments, US)*
Title ***Opening***

\# O3
Moderator *Dr. Insa Thiele-Eich (Die Astronautin, DE)*
Title ***Inspiration Space – A Journey to the Stars***
Download https://dieastronautin.de/en/

Workshops – Round 1

Room See each workshop
Date/Time Friday Mar 29, 15.00 – 16.30

WS1.1

Room Serenity
Moderator *Alexandre Gomes (T³, PT)*
Title ***STEM Realization with TI SensorLink***

Abstract The TI-Nspire CX, used with TI-Innovator Hub and TI-Innovator ROVER, enables the development of interactive solutions to the world around us, allowing the learning and application of the bases of operation of many so-called "smart things" of today, such as intrusion alarms or robot vacuum cleaners. All of this cutting-edge technology can be accessible in any classroom, enabling the development of essential skills for today's students and teachers. The TI-SensorLink, while not a dedicated data acquisition solution, serves the purpose of making the TI-Nspire CX + TI-Innovator Hub / TI-Innovator ROVER suite a robotic system even more interactive with the environment by including new measurable physical quantities. This workshop will present the basic principles of the operation of this technology, allowing the application in simple examples, but for wider application in the teaching / learning of this theme.

Technology TI-Nspire CX, TI-Innovator, Vernier Data Collection, TI-SensorLink
Prerequisites Moderate knowledge of how to use TI-Nspire CX and Vernier DataCollection
Hashtag #TISensorLink
Download https://resources.t3europe.eu/t3europe-home/?resource_id=2663

WS1.2

Room Clarity
Moderator *Dr. Hubert Langlotz, Ralph Huste (both T³, DE)*
Title ***From the first steps with Rover to autonomous driving (parallel parking)***

Abstract Starting with simple commands to let the Rover move we will show how a simple model of autonomous driving can be realized.
Step 1: Make the TI-Innovator Rover move FORWARD, BACKWARD, LEFT, and RIGHT until a certain limit.
Step 2: Include a further ultrasonic sensor to measure the length of possible parking spots
Step 3: Let the Rover find the first suitable parking spot
Step 4: Let the Rover parking parallel

Technology TI-Nspire CX, TI-Nspire CXCAS, TI-Innovator, TI-Innovator Rover
Prerequisites
Hashtag #Rover, #AutonomousDriving
Download https://resources.t3europe.eu/t3europe-home/?resource_id=2622

#	WS1.3
Room	Infinity
Moderator	*Gosia Brothers, Steve Debauge (both Texas Instruments, US)*
Title	***Product update TI-Nspire CX II-T and TI-Nspire CX II-T CAS***
Abstract	What is the TI-Nspire CX II-T and TI-Nspire CX II-T CAS? Come see the latest TI-Nspire updates; new colors, refreshed interface, and functional enhancements to support curriculums in mathematics and science. Share what you would like to see next and give feedback on functional enhancements ideas for the future.
Technology	TI-Nspire
Prerequisites	None
Hashtag	
Download	https://education.ti.com/tinspire

#	WS1.4
Room	Mosaic
Moderator	*Sanjeev Meston (T³, AU)*
Title	***The Rover can Power and Drive learning in the classroom***
Abstract	The TI-Innovator Rover provides a great opportunity to strive for multi-dimensional STEM focused integrated learning. This session will focus on 1. Analysing and understanding functions and graphs, 2. Vectors 3. Physics of motion 4. Coding in TI basic
Technology	TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover, Vernier DataCollection
Prerequisites	Familiarity with TI nspire CAS (hand held or software)
Hashtag	#STEM, #Coding, #Programming, #Mathematics, #Physics, #TI-Innovator, # TI-Rover, #CAS, #TInspire
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2656

#	WS1.5
Room	Innovation
Moderator	*Jürgen Enders (T³, DE)*
Title	***Coming home …***
Abstract	Imagine that you come home tired after a long day at work. Your car has found the way to your house all by itself and is now turned into your street. It drives to your property, stops and turns so it can drive to its pitch. The gate to your property opens, your car rolls up to its pitch and stops there. Now the lights are on in the path to your front door for your safety. You press the bell button. In the hall the light goes on and someone opens and greets you. Then you go to different rooms. Near the doors there are switches and all are able to switch the one light off or on in the hall. For these processes, programs will be developed in the workshop.
Technology	TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover
Prerequisites	none
Hashtag	#cominghome
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2629

#	WS1.6
Room	Exploration
Moderator	*Kevin Spry (Texas Instruments, US), Jessica Kohout (T³, US)*
Title	***Changing the Face of STEM Education***
Abstract	Careers in STEM fields continue to be in high demand. In order to ensure we meet those needs we require a diverse field of students to be studying STEM. In this discussion lead session we cover three steps towards addressing the issue. We will begin by exploring common stereotypes regarding STEM. Next we will present and share various research conducted on increasing gender and racial diversity in STEM education. Finally the discussion will conclude by collaborating on various potential pathways and changes that can be made to open STEM doors to everyone.
Technology	none
Prerequisites	none
Hashtag	#STEM, #Diversity, #WomenInSTEM
Download	http://bit.ly/SI19STEM

#	WS1.7
Room	Klimt
Moderator	*Bert Wikkerink (T³, NL), Peter Vaandrager (T³, NL)*
Title	***Using the Rover in the math lessons***
Abstract	In our school programming is a subject in the Mathematics curriculum. As Math is part of STEM education we use the Innovator and Rover in these lessons. For the Rover we designed a so called driver's licence. Students have to master various skills in programming the Rover to get this licence. During this workshop we will discuss the concepts and different skills needed and work in small groups on the assignments students have to do.
Technology	TI-Nspire CX, TI-Innovator
Prerequisites	TI-Nspire CX
Hashtag	#Rover, #MathinSTEM
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2668

#	WS1.8
Room	Harmony
Moderator	*Dave Santucci, Fred Fotsch (both Texas Instruments, US)*
Title	***Some Like it Tepid! – Using the New TI-SensorLink***
Abstract	Come to this workshop and have a hands-on experience using the new TI-SensorLink. This adapter allows the user to connect many BTA Vernier sensors to one of the TI-Innovator Hub's three input ports and read calibrated values with correct units from the attached sensor. During this session, participants will write a short TI-BASIC program to measure the temperature of a cup of coffee using a Vernier SS Temperature Probe and then display an appropriate message and an LED color output to inform the user of the temperature of their coffee. This is also an opportunity to share your thoughts on improvements in hardware and software support for Vernier sensors with the TI Team.
Technology	TI-Nspire CX/TI-83 PremiumCE/TI-84 Plus CE/TI-84 Plus CE-T + TI-Innovator Hub
Prerequisites	None
Hashtag	
Download	https://education.ti.com/innovator

#	WS1.9
Room	Creativity
Moderator	*Tonguc Özdas (T³, TR), Ugur Mert (T³, TR), Yunus Emre Dogan (T³, TR)*
Title	***New Generation of Data Collection Tools***
Abstract	This is a wide-ranging workshop which will delve into the following areas. - Coding with TI Calculators and TI Innovator - Coding with Grove Motion Sensors - Coding with Grove Thermistor Sensors - Coding with TI-SensorLink Adapter and Vernier Probes. - Updates of new OS - Limitations and Solutions - Q&A
Technology	TI-84 Plus CE-T, TI-Innovator, TI-Innovator Rover, Vernier DataCollection, TI-SensorLink Adapter
Prerequisites	Latest OS for TI calculators.
Hashtag	#coding with TI, #TI Innovator, #Coding with sensors, #T3Turkiye
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2642

#	WS1.10
Room	
Moderator	
Title	Cancelled
Abstract	
Technology	
Prerequisites	
Hashtag	
Download	

Workshops – Round 2

Room See each workshop
Date/Time Friday Mar 29, 17.00 – 18.30

#	WS2.1
Room	Stoclet & Mosaic
Moderator	*Donatella Falciai (T³, IT), Virginia Alberti (T³, IT)*
Title	***Safe autonomous driving***
Abstract	A safe autonomous driving based on a leading vehicle and a sequence of sensor based line follower self-driving cars
Technology	TI-Nspire CX, TI-Innovator, TI-Innovator Rover
Prerequisites	none
Hashtag	#autonomousdriving, #smartvehicles, #linefollowers
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2624

#	WS2.2
Room	Infinity
Moderator	*Gosia Brothers, Steve Debauge (both Texas Instruments, US)*
Title	***Product update TI-Nspire CX II-T and TI-Nspire CX II-T CAS***
Abstract	What are the TI-Nspire CX II-T and TI-Nspire CX II-T CAS? Come see the latest TI-Nspire updates; new colors, refreshed interface, and functional enhancements to support curriculums in mathematics and science. Share what you would like to see next and give feedback on functional enhancements ideas for the future.
Technology	TI-Nspire
Prerequisites	None
Hashtag	
Download	https://education.ti.com/tinspire

#	WS2.3
Room	Creativity
Moderator	*Christian Zöpfl (T³, AT), Dr. Hubert Langlotz (T³, DE)*
Title	***TI Innovator / TI Rover handbooks (German)***
Abstract	The TI Innovator and TI Rover focus group have prepared two handbooks for the Innovator and Rover. We would like to share these textbooks and discuss our examples with you. Starting with very easy programming tasks, the examples get more and more challenging and demanding. Intended for teachers not so familiar with programming we have provided step by step instructions. Nevertheless there are some tasks which are challenging enough for advanced students and teachers.
Technology	TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover
Prerequisites	none
Hashtag	#programming #TIInnovator #TIRover
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2657

#	WS2.4
Room	Clarity
Moderator	*John Bament (T³, AU)*
Title	***Innovator and Rover in the classroom***
Abstract	I have been using the TI Innovator and Rover with both Primary and Secondary students for a year now. In this hands-on workshop I will share with you some of my students' favorite TI-Hub activities.
Technology	TI-84Plus CE-T, TI-83 Premium CE, TI-Innovator, TI-Innovator Rover
Prerequisites	Will suit beginner to Innovator pro
Hashtag	#ti_rover, #ti_innovator, #coding, #STEM
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2674

#	WS2.5
Room	Exploration
Moderator	*Gertrud Aumayr (T³, AT), Dr. Helmut Heugl (T³, AT)*
Title	***The development of concepts by using prefabricated applets***
Abstract	An important phase of learning mathematics is the realization of concepts. The learning process usually proceeds in two phases: The experimental phase and the exactifying phase. Especially in the experimental phase visualizing, experimenting by using slider bars or simulating dynamic processes can lead to conjectures. Two sorts of tools can be used: a) Prefabricated applets offered by TI education materials or produced by the teacher b) Tools produced by the students Topic of this workshop will be the development of the following concepts: • Limits of sequences and real functions • The differential quotient • The integral In this workshop we will first present some prefabricated applets and let the participants experiment with them. Together with the participants we will then develop such applets from scratch and suggest some applets which students can create for themselves.
Prerequisites	TI-Nspire CX CAS
Technology	TI-Nspire CX CAS
Hashtag	#applets
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2658

#	WS2.6
Room	Harmony
Moderator	*Harshal Chhaya, Dave Santucci (both Texas Instruments, US)*
Title	***New STEM packs***
Abstract	Learn about the new additions to the TI-Innovator™ Hub ecosystem. The TI team would like to share details of the new STEM packs that enable new activities with the TI-Innovator Hub. This includes the TI-SensorLink add-on that enables projects that use Vernier analog sensors. This is also an opportunity to share your thoughts on the hardware and software system of the TI-Innovator Hub.
Technology	TI-Nspire CX/TI-83 PremiumCE/TI-84 Plus CE/TI-84 Plus CE-T + TI-Innovator Hub
Prerequisites	None
Hashtag	
Download	https://education.ti.com/innovator

#	WS2.7
Room	Serenity
Moderator	*Cathy Baars (T³, NL)*
Title	***Forensic science***
Abstract	Series as CSI, Bones and Silent witness are very popular among students (and teachers). Why not do it ourselves? With the aid of TI-84 Plus CE-T or TI-Nspire CX it is possible to do forensic science. During this workshop you can choose between 3 different crime scenes: car accident, murder and break in. If time permits you will be able to do 2 investigations. Technologies used during this workshop are: TI-84 Plus CE-T, TI-Nspire CX, CBR2, ranger, Lab cradle and temperature sensor
Technology	TI-84Plus CE-T, TI-Nspire CX, TI-Nspire CX CAS, Vernier DataCollection
Prerequisites	Teachers who like to solve a crime and are not afraid of doing practical work.
Hashtag	#CSI, #Practical, #real
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2634

#	WS2.8
Room	Innovation
Moderator	*Harmen Westerveld (T³, NL)*
Title	***Linear programming with the TI-84Plus CE-T in the classroom***
Abstract	Linear programming is a choice topic for mathematics in the Netherlands. I was searching for a meaningful use of the TI-84 Plus CE-T in the classroom and was surprised by the possibilities. I would like to share this discovery experience with you.
Technology	TI-84Plus CE-T
Prerequisites	some knowledge of linear programming and the simplex algorithm
Hashtag	#linearprogrammingTI84
Download	https://resources.t3nederland.nl/fileadmin/t3-nl/Symposium2018/LP.pdf (full version in Dutch)

#	WS2.9
Room	
Moderator	
Title	Cancelled
Abstract	
Technology	
Prerequisites	
Hashtag	
Download	

#	WS2.10
Room	Klimt
Moderator	*Anne Marie MacLean (L'Institut La Gruyère, CH), Christof Deiwiks (Texas Instruments, DE)*
Title	***MYP* mathematics using the TI-Nspire CX***
Abstract	Using the concepts and assessment criteria of the MYP in mathematics we will have an interactive workshop where we will look at getting MYP students to use "active learning", and technology to investigate and apply. (*MYP = Middle Year Program of the International Baccalaureate, for students aged 11-16 years old)
Technology	TI-Nspire CX
Prerequisites	none
Hashtag	#getting to the higher level thinking in middle years mathematics
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2625

#	WS2.11
Room	Vision
Moderator	*Jean-Baptist Civet (T³, FR), Boris Hanus (T³, FR)*
Title	***Python examples linked to the new French lycée curriculum***
Abstract	A short introduction to Python with applications to historical math problems such as the "paradox of Chevalier de Méré", and the programming of simple games in Python. Examples that will illustrate a publication book to be released with Eyrolles for June 2019.
Technology	TI-83 Premium
Prerequisites	This workshop is designed for intermediate programming skill. Teachers with no knowledge on Python might also decide to attend DG 2.9
Hashtag	
Download	>add link<

Playstations at Playground

Room: Ballroom
Date/Time: Friday Mar 29, 19.30 - …

\# PS.1
Moderator: *Alexandre Gomes (T³, PT)*
Title: ***Rover Wheelchair***
Abstract: The development of wheelchair control solutions for people with severe limitations of fine motor use of the upper limbs has occupied a central place in many technology industries. This project shows a real possibility of controlling a wheelchair with head movements, without the need for physical contact with the control, since the distance sensor is used to control the movement of the same. The same principle can be used to enable individuals with this disease to effectively control some computer games. The wheelchair will be simulated by the ROVER and Ultrasonic Ranger, which will be controlled by movements of the user's head.
Technology: TI-Nspire CX, TI-Innovator, TI-Innovator Rover
Hashtag: #ROVERWheelchair
Download: https://resources.t3europe.eu/t3europe-home/?resource_id=2684

\# PS.2
Moderator: *Jean-Baptist Civet (T³, FR), Boris Hanus (T³, FR)*
Title: ***Interfacing with the world***
Abstract: How to use the TI-Innovator to control any electronic device or run such machines as the TI-Innovator Rover.
Technology: TI-83 Premium CE, TI-Innovator, TI-Innovator Rover
Hashtag: #TI-Innovator
Download: >add link<

\# PS.3
Moderator: *Gerhard Stolz (Texas Instruments, DE)*
Title: ***TI STEM Labs***
Abstract: TI STEM Lab schools explore new integrative ways in math, science, computer science and engineering education. The network serves as platform to exchange practical experience on national and international level. Knowledge transfer happens in means of professional development and by dissemination of educational content.
Technology: TI-Nspire
Hashtag: #TInspiringSTEM
Download: https://www.t3europe.eu

\# PS.4
Moderator: *Bert Wikkerink (T³, NL)*
Title: ***Rover demonstrations***
Abstract: Some interesting Rover and Innovator applications.
Technology: TI-Nspire CX, TI-Innovator, TI-Innovator Rover
Hashtag: #Rover
Download: https://resources.t3europe.eu/t3europe-home/?resource_id=2668

#	PS.5
Moderator	*Jan Dobrindt (Texas Instruments, DE), Mourad Afkhessi (Texas Instruments, FR)*
Title	***Update Station***
Abstract	• OS update service for TI-Nspire CX/ TI-Nspire CX CAS,TI-84 plus C-ET/TI-83 premium handheld technology • OS update service for TI-Nspire CX SW, TI-Smartview CE for TI-84 plus family, TI-Smartview CE for TI-83 plus family • OS update service TI-Nspire Software • OS update service TI-Nspire app/TI-Nspire CAS app • OS update service for TI-Innovator Hub • OS update service for TI-Python adapter • OS update service TI-Smartview for Mathprint calculators • Charging station for TI-Nspire CX handhelds, TI-84 plus C-ET handhelds, TI-83 premium handhelds, TI-Innovator Rover • Technical support e.g. replacing recharging battery for TI-Nspire CX technology, installing new TI-Nspire premium CX/CX Software, missing cables etc.
Technology	all
Hashtag	
Download	https://education.ti.com/en/downloads

#	PS.6
Moderator	*Dirk Schulze (T³, DE)*
Title	***Scientific projects using TI-Nspire and Vernier data collection technology***
Abstract	Since 2011 more than 45 scientific projects were developed at the Jugend Forscht competition in Germany. The Play Station will show how many of these projects benefitted from data collection, mathematical modeling and visualization via TI-Nspire technology. The versatility with which Vernier sensors can be used do explore, investigate or test hypothesis will be demonstrated. The Play Station will give a chance to experiment with some sensors of interest and also see how project ideas were realised via 3D-printing, laser cutters or (still in development) moulder cutters.
Technology	TI-Nspire CX CAS, TI-Innovator Rover, Vernier DataCollection
Hashtag	#sensors, #nspire, #vernier
Download	>add link<

#	PS.7
Moderator	*Christof Deiwiks (Texas Instruments, DE)*
Title	***The T³ content database***
Abstract	The T³ content database is constantly growing and a lot of exciting content has been distributed through this channel so far. Take a closer look at it and learn how you can distribute your own material.
Technology	TI-84Plus CE-T, TI-83 Premium CE, TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover, Vernier DataCollection
Hashtag	#contentthatmakesyoufeelcontent
Download	http://resources.t3europe.eu/

#	PS.8
Moderator	*Hans-Ulrich Lampe (T³, DE)*
Title	***Activities of BiuTi – T³ Germany Biology***
Abstract	Some biology experiments using the TI-Nspire Technology and the Vernier Sensors to provide an insight into the activities of the German T³- Biology-Group. The topic will be animal respiration. You will see the Spirometer and the CO_2 Gas Sensor in action.
Technology	TI-Nspire CX CAS, Vernier DataCollection
Hashtag	#biologyexperiment #biologydatacollecting
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2681

#	PS.9
Moderator	*Heidi Liebig, Carina Kroninger, Marthe Pariset & Sónia Reis (all Texas Instruments)*
Title	***TI Programs and activities for teachers***
Abstract	Come and visit us into in our interactive space, where you can see more of the different activities that we develop for teachers throughout Europe. Engage in the different fun activities that we will prepare for you!
Technology	
Hashtag	
Download	https://education.ti.com/

#	PS.10
Moderator	*Jürgen Langlet (MNU, DE)*
Title	***GeRRN = Common European Framework for Science Education***
Abstract	These days, the statement that natural sciences education, as is music, literature or philosophy, is part of general knowledge is agreed. As part of our cultural heritage, the natural sciences lay the foundations for the future of humanity. Pending difficult decisions regarding climate policy, medicine, digital technology, call for the scientifically mature citizen. Against the background of the European Commission's Qualification Framework (2006) for lifelong learning we will discuss what it means to be able to explain the natural world on the basis of existing knowledge and be able to ask questions and to draw conclusions based on evidence. Following a presentation of the Common Framework we will discuss its implications for the whole of Europe.
Technology	none
Hashtag	#natural science
Download	https://www.mnu.de/publikationen#gerrn https://resources.t3europe.eu/t3europe-home/?resource_id=2677

#	PS.11
Moderator	*Fred Fotsch (Texas Instruments, US)*
Title	***STEM Camps & Projects***
Abstract	Stop by and discuss the successes, difficulties, and opportunities US educators have experienced while doing STEM projects in their classes and share your experiences with the TI STEM Team. This is an opportunity to discuss and provide feedback on resources, software, and hardware used to do STEM projects in your classroom.
Technology	TI-Nspire CX/TI-83 PremiumCE/TI-84 Plus CE/TI-84 Plus CE-T + TI-Innovator Hub
Hashtag	
Download	https://education.ti.com/stem

#	PS.12
Moderator	*Prof. Dr. Gultekin Cakmakci (Hacettepe University, TR)*
Title	**TI activities at STEM & Makers Fest/Expo, Turkey**
Abstract	It's in the title, see how we use the TI STEM solution at Maker Fairs across Turkey.
Technology	
Hashtag	
Download	https://stempd.net/ http://www.hstem.hacettepe.edu.tr/en

#	PS.13
Moderator	*Annika Ostergren (European Commission; BE)*
Title	***EU Code Week – what's in it for teachers?***
Abstract	EU Code Week is a grassroots movement supported by the European Commission that aims to bring programming and related technology skills to people of all ages and especially children in primary and secondary schools. Code Week offers all students the possibility to make their first steps as digital creators, by providing schools and teachers free professional development opportunities, teaching materials, international challenges and opportunities to exchange. We believe anybody's basic literacy in a digital age must include an understanding of coding and the development of crucial competences related to computational thinking, such as problem solving, collaboration and analytical skills. Stop by and learn how you can get involved in EU Code Week and share your experiences if you already are an active participant.
Technology	
Hashtag	#CodeWeek, #CodeEU
Download	https://codeweek.eu/schools

#	PS.14
Moderator	*Steve Debauge (Texas Instruments, US)*
Title	***Global curriculum & Exam overview***
Abstract	Stop by for an overview TI technologies that are applied in exams around the globe. Learn about solutions that are used to prepare calculators for use during exams. Learn about TI solutions for computer-based exams, including support for students who are blind or low-vision.
Technology	TI-84 Plus CE family products, including the TI-83 Premium CE for France. TI-Nspire CX and TI-Nspire CX II family products. TI ExamCalc software solutions.
Hashtag	
Download	https://education.ti.com/en/resources/test-preparation

#	PS.15
Moderator	*Dr. Agueda Gras-Velazquez (Scientix; BE)*
Title	***Scientix – innovating STEM classroom practices***
Abstract	Increasing the motivation of students towards studying Science, Technology, Engineering and Mathematics (STEM) subjects and raising achievement in these areas are important challenges faced by European education systems. The school environment is key to addressing these challenges and teachers, their training and knowledge of innovative tools and materials are essential elements in the mix. Together with guest speakers and session participants, Scientix will explore the conditions for an effective STEM education and will bring forward STEM education initiatives that work towards improving STEM classroom practices.
Technology	
Hashtag	@scientix_eu
Download	http://www.scientix.eu/

#	PS.16
Moderator	*Florent Girod (T³, FR), Laurent Didier (T³, FR)*
Title	***Something from the ICN* activities with Rover***
Abstract	See some ideas for your classroom. Make Rover follow regular polygons. See some autonomous driving with ideas such as park assist and reversing radar. (*ISN = Informatique et Création Numérique)
Technology	
Hashtag	
Download	>add link<

#	PS.17
Moderator	*Product Development Team (all Texas Instruments, US)*
Title	***Product Corner***
Abstract	TI showing new stuff: TI-Nspire CXII-T, TI-Nspire CXII-T CAS, TI-SensorLink and new modules, Python solution
Technology	
Hashtag	
Download	https://education.ti.com/

#	PS.18
Moderator	*Yunus Emre Doğan (T³, TR), Tonguç Özdaş (T³, TR), Uğur Mert (T³, TR)*
Title	***Take a risk or not!***
Abstract	It's a risk taking and optimization game. Participants will play a game against each other to find the best or optimized solution for given challenge.
Technology	TI-84Plus CE-T, TI-Innovator, TI-Innovator Rover
Hashtag	#teambuilding, #risk, #optimization, #ti-innovator, #ti-rover
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2642

#	PS.19
Moderator	*Lucie Jaburkova, Tobias Fischer (Customer Support Center, CZ)*
Title	***TI-Cares***
Abstract	How many customer support calls do we receive and reply in a year? How much time do we take to reply to a customer e-mail? What are the top 10 questions that students have regarding TI technology? Learn more and experience the behind the scenes of TI Customer Support Center in this playstation!
Technology	
Hashtag	#CSC, #support, #excellence
Download	https://education.ti.com/csc

#	PS.20
Moderator	*Dr. Sebastian Staacks (University of Aachen, DE)*
Title	***TI Sensortag & Phyphox***
Abstract	See this device, the TI (blue tooth) Sensortag, in action with the freely available app, phyphox. The app "phyphox" offers powerful yet easy to use function to employ the sensors in our smartphones for physics experiments. It has been developed at the RWTH Aachen University with education in mind and is available for free on Android and iOS. However, with its new Bluetooth Low Energy interface, it can be extended to use external sensors like the TI SensorTag for those situations in which a more specific sensor is required or the larger price and form factor of a phone might be problematic.
Technology	TI-Sensortag, Phyphox app, smartphone
Hashtag	
Download	www.phyphox.org

#	PS.21
Moderator	*Yvan Haine (T³, BE), Michelle Solhosse (T³, BE)*
Title	***The drunkard's walk***
Abstract	The problem is the following. A drunkard moves on a straight line. As he is completely drunk, at every step, he does not know if he has to move forward or backward. Will he eventually return to his starting point? Will he be able to join his home a certain distance from his starting point? What is the probability for him to get there in n steps? The presentation will propose programs to perform different simulations, with or without Rover, will study the statistics obtained and will establish the theoretical probabilities of this problem.
Technology	TI-Nspire CX CAS; TI-Innovator Rover
Hashtag	#programming, #random, #probabilities
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2640

#	PS.22
Moderator	*Sabrina Peireira (T³, PT)*
Title	***From Scratch to TI-Innovator/Rover***
Abstract	This activity attempts to make a bridge between what students learn in their first school years with Scratch and the visualization of how a code can be translated into something concrete, with Rover.
Technology	TI-Nspire CX, TI-Nspire CXCAS, TI-Innovator Rover
Hashtag	
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2675

#	PS.23
Moderator	*Ioannis Theocharopoulos with students (Schola Europaea, BE)*
Title	***Physics experiments and explorations with the TI ecosystem***
Abstract	1. Forced oscillation and resonance 2. Friction curve and ABS functionality 3. Stroboscope with TI-Innovator 4. Uniform circular motion 5. Sound absorption 6. Acceleration and uniform motion - inertial forces 7. Coding and decoding of optical message 8. Color mixing with TI-Innovator and a glass of water with milk 9. Electronic dice game
Technology Hashtag	TI-Nspire CXCAS, TI-Innovator, TI-Innovator Rover
Download	>add link<

#	PS.24
Moderator	*Denise Groeneweg (WisMon, NL)*
Title	***Inquiry-based learning with TI-Nspire Technology***
Abstract	How can you guide your students in their inquiry-based learning process? Discover the different steps of inquiry-based learning and see how the TI-Nspire CXCAS can help students discover the natural sciences.
Technology Hashtag	TI-Nspire CXCAS, TI-Innovator, TI-Innovator Rover
Download	http://www.wismon.nl/ https://resources.t3europe.eu/t3europe-home/?resource_id=2672

#	PS.25
Moderator	*Peter Fox (T³, AU)*
Title	***Looking at TI-Innovator and Rover from Down-Under***
Abstract	Come along and play with some of the activities and ideas being developed in Australian classrooms using the TI-Innovator, TI-Innovator Rover and basic coding. Try and solve some of the mathematics problems using coding, try our Letters and Numbers game or play with Innovator and Rover.
Technology Hashtag	TI-Nspire CXCAS, TI-Innovator, TI-Innovator Rover
Download	https://education.ti.com/en-au/australiancurriculumnspired/aus-nz/home

#	PS.26
Moderator	*Olli Karkkulainen (T³, FI), Markku Parkonen (T³, FI)*
Title	***Final exams in Finland are digital.***
Abstract	In Finland final examinations are being introduced in an electronic format across all subjects. We have been developing tools to help students create good exam answers. In particular we have developed a range of Lua widgets to support students and we would like to share our experience and thoughts about these through discussion with you.
Technology Hashtag	TI-Nspire CXCAS, TI-Innovator, TI-Innovator Rover
Download	http://nspire.fi/

Discussion Groups – Round 1

Room See each discussion group
Date/Time Saturday Mar 30, 09.00 – 12.30

\# DG1.1
Room Exploration
Moderator *Medhat Merabi, Mohamed AbdulBaqi, Antoine Fayad (all T³, BH)*
Title ***M and S side by side***

Abstract
Thinking about maths and science this session will use hands on practical stations of TI Innovator hub activities such as

1) Automated lock
2) Helmet design
3) Roto copters (using sensors to calculate speed and acceleration of free falling objects)
4) Mood ring (our version of it)
5) Looking into an idea with sound frequencies

Technology TI-Nspire CX, TI-Innovator, Vernier DataCollection
Prerequisites To go over the 10 min code on TI Website
Hashtag # Innovate
https://resources.t3europe.eu/t3europe-home/?resource_id=2626
Download https://resources.t3europe.eu/t3europe-home/?resource_id=2630

\# DG1.2
Room Innovation
Moderator *Jürgen Langlet (MNU, DE)*
Title ***Common Framework of Reference for the Natural Sciences***

Abstract
These days, the statement that natural sciences education, as is music, literature or philosophy, is part of general knowledge is agreed. As part of our cultural heritage, the natural sciences lay the foundations for the future of humanity. Pending difficult decisions regarding climate policy, medicine, digital technology, call for the scientifically mature citizen.
Against the background of the European Commission's Qualification Framework (2006) for lifelong learning we will discuss what it means to be able to explain the natural world on the basis of existing knowledge and be able to ask questions and to draw conclusions based on evidence.
Following a presentation of the Common Framework we will discuss its implications for the whole of Europe.

Technology None
Prerequisites read one of the downloads.
Hashtag #NaturalSciences
https://www.mnu.de/publikationen#gerrn
https://www.mnu.de/images/publikationen/GeRRN/CoFReNS_GeRRN-English_2017-11-03.pdf
Download https://resources.t3europe.eu/t3europe-home/?resource_id=2677

#	DG1.3
Room	Klimt
Moderator	*Sebastian Rauh (T³, DE)*
Title	***Exploring the TI-Nspire CAS App (iPad) Workshop***
Abstract	A crucial element in mathematical didactics is linking different representations of one mathematical object. This might be a function or relation given as a collection of terms, a graph or a value table. Using the TI-Nspire CAS App you are going to create dynamic worksheets in several mathematic topics which can be used in your classes either as demonstration or as material for your students. The workshop includes algebra, analysis, statistics and physics.
Technology	TI-Nspire CAS App for iPad
Prerequisites	None
Hashtag	
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2641

#	DG1.4
Room	Harmony
Moderator	*Jessica Kohout (T³, US), Kevin Spry (Texas Instruments, US)*
Title	***Who Is Drowning in Our Trash? – STEM and Environmental Solutions***
Abstract	The global real-world issue of human-generated trash, polluting local bodies of water, is the main focus of this hands-on session. We need to create the next generation of STEM leaders by solving real-world problems using the engineering design process. We will focus on the growing problem of handling waste and how we can design solutions to minimize its impact on the environment. In the session, participants will experience the entire engineering design process. This will include identifying the problem, developing and then implementing potential solutions. Participants will reuse single-use plastics - plastic water bottles, straws, spoons, bags and design a working model for trash removal.
Technology	TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator
Prerequisites	None
Hashtag	#PlanetOrPlastic, #PlasticPollution, #STEM, #Innovation
Download	http://bit.ly/SI19TW

#	DG1.5
Room	Serenity
Moderator	*Fred Fotsch, Dave Santucci (both Texas Instruments, US)*
Title	***TI-Innovator STEM Projects-Pet Car Alarm***
Abstract	This hands-on session will be a deep-dive into the Pet Car Alarm STEM project: “students are given the challenge to design a “smart” pet alarm that will cool the interior of a car and notify the owner if a pet has accidentally been left in a hot car”. Participants will use the Hub, their choice of graphing technology, and the new TI sensor kits, to investigate the math and science behind designing and building a sensor informed alarm system for a car that blinks the headlamps, honks the horn, and rolls down the window when a pet is detected within in a car and the interior temperature exceeds a critical threshold temperature.
Technology	TI-Nspire CX/TI-83 PremiumCE/TI-84 Plus CE/TI-84 Plus CE-T + TI-Innovator Hub
Prerequisites	None
Hashtag	
Download	Pet Car Alarm Project

#	DG1.6
Room	Vision
Moderator	*Cathy Baars (T³, NL)*
Title	***How can physics and maths help each other***
Abstract	In my school there is no collaboration between maths and physics teachers. I think that is a pity because both subjects can benefit from each other. For example the ranger can help students understand that the velocity is the gradient of a displacement time graph. The main purpose of this discussion group is to identify topics where maths and physics can benefit from each other and to devise proposals and general lesson plans for these lessons.
Technology	TI-84Plus CE-T, TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator Rover, Vernier DataCollection
Prerequisites	Interest in collaboration between math and physic. No fear for experimentation.
Hashtag	#collaboration, #math and physics, #benefit of other disciplines
Download	>add link<

#	DG1.7
Room	Infinity
Moderator	*Ian Galloway (T³, UK), Frank Liebner (T³, DE)*
Title	***The STEM debate from the Science perspective.***
Abstract	Is scientific modeling different to mathematical modeling? Is it possible to teach science without mathematics? Is science teaching already STEM teaching?...if not, what is missing? Is modern science teaching fit for the 21st century? • What is a good STEM lesson? • How to motivate more girls? • How to ensure quality PD? • What is STEM? Skills or content? • What is the added value (of thinking about STEM) for student understanding?
Technology	
Prerequisites	
Hashtag	#diversity, #stemlesson, #stemskills
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2659

#	DG1.8
Room	Clarity
Moderator	*Epi van Winsen (NL), Eduardo Cunha (PT), Bengt Ahlander (SE)*
Title	***Why and how to transition from TI-84 Plus CE-T to TI-Nspire CX (CAS)?***
Abstract	We will focus on producing answers to the following questions and any others which arise out of discussion. • Do we have good examples where the added value of the TI-Nspire is visible? • What are the really strong points for the TI-Nspire such as multiple representation, dynamic representation, visualisation of math? • How can we get this across to TI-84 users? • What dissemination system has been tried? What results? New ideas? • How can we reinforce the message, *"The TI-Nspire is a didactical tool, not just another graphing calculator"* Central questions are "Why the transition?" and "How to transition"?
Technology	
Prerequisites	An interest in transition, or experience of transitioning
Hashtag	
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2682

Discussion Groups – Round 2

Room See each discussion group
Date/Time Saturday Mar 30, 14.00 – 17.30

#	DG2.1
Room	Harmony
Moderator	*Jessica Kohout (T³, US), Kevin Spry (Texas Instruments, US)*
Title	***Promoting Productive Struggle to Enhance Student Learning***
Abstract	STEM projects by their very nature involve struggle through the design and implementation of solutions to problems. The principle of productive struggle is that when students confront and fail a challenging problem, rather than directing them to the solution, they are then provided further clarifying instructions, to guide them on their own path of learning. Students are more successful by developing strong habits of mind, such as perseverance and thinking flexibly, instead of simply seeking the correct solution. We will explore the strategies and teaching methods involved in promoting productive struggle. Just as importantly, how to identify when destructive struggle is occurring, and redirect it in a productive way.
Technology	TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover
Prerequisites	None
Hashtag	#ProductiveStruggle, #STEM, #NoticeAndNote, #LifeLongLearning
Download	http://bit.ly/SI19PS

#	DG2.2
Room	Exploration
Moderator	*Dr. Ismail Donmez, Seraceddin Gurbuz, Prof. Dr. Gultekin Cakmakci (all Science and Art Center, Ankara, Turkey), Tuba Kocabiyik, Varsak Middle School, Antalya, Turkey*
Title	***Engineering Practices in STEM Education***
Abstract	Both science and engineering practices are important in STEM education. Although science practices are practices in many STEM activities, engineering practices are either ignored or only implicitly addressed in them. This session focuses on the nature of STEM and in particular how to explicitly address engineering practices in STEM Education.
Technology	
Prerequisites	
Hashtag	
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2631 https://resources.t3europe.eu/t3europe-home/?resource_id=2632

#	DG2.3
Room	Infinity & Grace
Moderator	*Ludovic Waalart (T³, NL)*
Title	***Creating instructional videos***
Abstract	The dos and don'ts of creating instructional videos.
Technology	TI-84Plus CE-T, TI-83 Premium CE, TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover, Vernier DataCollection, general STEM
Prerequisites	Open mind
Hashtag	#Videos, #YouTube, #editing, #instructing
Download	www.wil-dewiskunde.nl

#	DG2.4
Room	Klimt
Moderator	*Peter Fox (T³, AU)*
Title	***A visual approach to teaching, learning and understanding mathematics***
Abstract	"I see what you mean", it's part of our vernacular. It's in our DNA, "Our eyes contain 70% of the body's sensory receptors". Our brains are wired to "never forget a face". From simple algebraic concepts to proof by induction, visual images can help students learn, understand and remember mathematical concepts. Powerful visual representations should be part of every teacher's toolkit. In this discussion a collection of dynamic visuals will be presented and shared alongside the mathematical content, companioned with the appropriate use of CAS. Don't miss out because: "seeing is believing".
Technology	TI-Nspire CX CAS
Prerequisites	Basic use and navigation of a graphing calculator, preferably TI-Nspire CX will improve participant experience.
Hashtag	#T3Australia, #NspiredFox
Download	https://education.ti.com/en-au/australiancurriculumnspired/aus-nz/home

#	DG2.5
Room	Serenity
Moderator	*Fred Fotsch, Dave Santucci (both Texas Instruments, US)*
Title	***TI-Innovator STEM Projects-Smart Irrigation***
Abstract	This hands-on session will be a deep-dive into the Smart Irrigation STEM project: "Students are challenged to design a smart irrigation system that could be used to monitor and meter water from a rain collection cistern to irrigate a small family garden in Zimbabwe". Participants will use the Hub, their choice of graphing technology, and the new TI sensor kits, to investigate the math and science behind designing and building a sensor informed water pumping system for irrigating a greenhouse or garden. Greenhouse extensions include additional control of illumination and air flow.
Technology	TI-Nspire CX/TI-83 PremiumCE/TI-84 Plus CE/TI-84 Plus CE-T + TI-Innovator Hub
Prerequisites	
Hashtag	
Download	Smart Irrigation Project

#	DG2.6
Room	
Moderator	
Title	Cancelled
Abstract	
Technology	
Prerequisites	
Hashtag	
Download	

#	DG2.7
Room	Creativity
Moderator	*Alfonso D'Ambrosio, Pier Luigi Lai, Salvatore Madaghiele (all T³, IT)*
Title	***Physics with TI Innovator***
Abstract	This is a journey about data collection using sensors like temperature and humidity probes, ultrasonic rangers, and photoresistors for physics and math. How do we go about collecting data, analyzing them and then realize a mathematical model from them.
Technology	TI-Nspire CX
Prerequisites	programming
Hashtag	#physics, #tiInnovator, #coding, #sensorsTInspire
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2669

#	DG2.8
Room	Clarity
Moderator	*Olli Karkkulainen, Markku Parkonen, Johanna Parvinen (all T³, FI)*
Title	***Final exams in Finland are digital.***
Abstract	In Finland final examinations are being introduced in an electronic format across all subjects. We have been developing tools to help students create good exam answers. In particular we have developed a range of Lua widgets to support students and we would like to share our experience and thoughts about these through discussion with you.
Technology	
Prerequisites	
Hashtag	
Download	http://nspire.fi/

#	DG2.9
Room	Vision
Moderator	*Abir Marina (T³, FR), Jean-Louis Balas (T³, FR)*
Title	***Coding with Python - examples from France***
Abstract	Python was built in 1990 and is widely used in general computer science. Easy to learn and allows the user to create functions with a few lines of code; versatile and multiplatform. Participants will find this session more hands on and less discursive. We will introduce you to maths lessons with the new Python app, from TI-Basic to a full coding language on TI 83 Premium CE.
Technology	TI 83 Premium CE; TI-Python
Prerequisites	Maths teachers. Beginners. Not recommended for French T³ as they received this training already.
Hashtag	
Download	>add link<

Social Event Brussels

Evening program: guided tour through historic Brussels with dinner

18.20 Meet in lobby
18.30 departure with tour guide (tours are offered in English, French and German)
19.30 dinner at Roy D'Espagne, Grand Place 1, Brussels http://roydespagne.be
22.30 return

Presentations – Round 1

Room See each presentation
Date/Time Sunday Mar 31, 09.00 – 10.00

#	P1.1
Room	Vision
Moderator	*Sabrina Peireira (T³, PT)*
Title	***From Scratch to TI-Innovator/Rover***
Abstract	This activity attempts to make a bridge between what students learn in their first school years with Scratch and the visualization of how a code can be translated into something concrete, with Rover.
Technology	TI-Nspire CX, TI-Nspire CXCAS, TI-Innovator Rover
Prerequisites	Don't know yet
Hashtag	
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2675

#	P1.2
Room	
Moderator	
Title	cancelled
Abstract	
Technology	
Prerequisites	
Hashtag	
Download	

#	P1.3
Room	Clarity
Moderator	*Peter Vaandrager (T³, NL), Bert Wikkerink (T³, NL), Raul Goncalves (T³, PT)*
Title	***International students exchange***
Abstract	On March 12 and 13 students from Portugal and the Netherlands worked together on programming (Rover and Innovator) and biology using the TI-84 CE-T respective TI-Nspire CX. In this presentation we will outline what the students did, what their experiences were in using TI equipment and what could be improved. We think this approach could be an inspiration to teachers using TI equipment in the classroom and during international exchanges.
Technology	TI-84Plus CE-T, TI-Nspire CX, TI-Innovator, TI-Innovator Rover
Prerequisites	TI-Nspire or TI-84Plus CE-T
Hashtag	#International
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2668

#	P1.4
Room	Serenity
Moderator	*Luc Blomme (T³, BE)*
Title	***An introduction to programming with the TI-Innovator Rover using the TI-Nspire CX CAS***
Abstract	The TI-Nspire technology offers an excellent platform to introduce from scratch in the classroom, the concept of coding. Why is this new and interesting? Because the TI-Innovator Rover moves. The Rover adds a physical dimension to the verbal, symbolic and graphic representations. It turns programming into a fun activity. Controlling the behavior of the Rover through a (simple or more advanced) program on the TI-Nspire handheld is an attractive and rewarding activity for pupils from all ages of secondary school. In this presentation we will introduce the basic concepts of programming and apply them to writing programs for the Rover from very basic to quite creative and challenging.
Technology	TI-Nspire CX CAS, TI-Innovator Rover
Prerequisites	Basic knowledge of the TI-Nspire CX CAS
Hashtag	#coding, #TI-Rover, #STEM
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2664

#	P1.5
Room	Exploration
Moderator	*Christof Deiwiks (Texas Instruments, DE)*
Title	***Exploring the T³ content database***
Abstract	The T³ content database is constantly growing and a lot of exciting content has been distributed through this channel so far. In this workshop I would like to give a deeper insight into the database. We will explore the content, look behind the scenes and will give everybody the opportunity to create their own user account. So after this presentation, each participant will be able to distribute their content right away.
Technology	TI-84Plus CE-T, TI-83 Premium CE, TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover, Vernier DataCollection
Prerequisites	none
Hashtag	#contentthatmakesyoufeelcontent
Download	http://resources.t3europe.eu/ https://resources.t3europe.eu/t3europe-home/?resource_id=2661 https://resources.t3europe.eu/t3europe-home/?resource_id=2667

#	P1.6
Room	Harmony
Moderator	*Heidi Liebig, Sonia Reis (both Texas Instruments)*
Title	***T³ website and TI STEM Labs Communication***
Abstract	In this presentation we would like to share with you the communication activities we are developing to raise awareness about T³ Europe and TI STEM Labs activities, so that more teachers throughout Europe can know about and take advantage of these programs in their daily teaching practices. We will be looking forward to your feedback and ideas on how to reach more teachers and engage them into STEM innovative practices.
Technology	
Prerequisites	
Hashtag	
Download	https://www.t3europe.eu

#	P1.7
Room	Innovation
Moderator	*Nils Dörffer (Cornelsen, DE)*
Title	***Pioneering the Future of Work in Teaching and Learning – Cornelsen's mBooks***
Abstract	Our world is changing and accelerating under the impetus of new and digital technologies. Today, pupils are highly used to mobile devices and web-based services. A crucial question is: how will this development shape the future practice of teaching and learning? In the talk, Nils Dörffer (Cornelsen Verlag) will report from a publishers perspective on how digital technologies can offer new educational opportunities. He will look at Cornelsen's 'mBooks'. These pioneering digital textbooks combine classic learning materials with interactive applets, videos and evaluation tools.
Technology	TI-Nspire CX
Prerequisites	None
Hashtag	#future #edtech #Elearning #digital #math #html #web #OnlineLearning #HigherEd #HighSchool
Download	www.cornelsen.de/mbook

#	P1.8
Room	Creativity
Moderator	*Yvan Haine (T³, BE), Michelle Solhosse (T³, BE)*
Title	***The drunkard's walk***
Abstract	The problem is the following. A drunkard moves on a straight line. As he is completely drunk, at every step, he does not know if he has to move forward or backward. Will he eventually return to his starting point? Will he be able to join his home a certain distance from his starting point? What is the probability for him to get there in n steps? The presentation will propose programs to perform different simulations, with or without Rover, will study the statistics obtained and will establish the theoretical probabilities of this problem.
Technology	TI-Nspire CX CAS; TI-Innovator Rover
Prerequisites	Knowing simple notions of programming (alternatives, loops)
Hashtag	#programming, #random, #probabilities
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2640

#	P1.9
Room	Infinity
Moderator	*Denise Groeneweg, Sanne Kostermann (both WisMon, NL)*
Title	***Inquiry-based learning with TI-Nspire Technology***
Abstract	Technology and science are constantly changing our society. Skills such as critical and creative thinking, problem solving, and collaborating have become essential. Inquiry-based learning is a teaching method that helps students to develop these skills by conducting their own research. The students' curiosity is leading in their learning process. With TI-Nspire Technology, students can easily perform their own research in the classroom. Because of the large number of available sensors, students can collect data and then easily process and analyze this data. This presentation will demonstrate how TI-Nspire Technology can complement inquiry-based learning in the classroom.
Technology	TI-Nspire CX
Prerequisites	
Hashtag	
Download	http://www.wismon.nl/

Presentations – Round 2

Room See each presentation
Date/Time Sunday Mar 31, 10.15 – 11.15

\# P2.1
Room Vision
Moderator *Luigi Tomasi (T³, IT)*
Title ***Mathematics at Bac exam in Italy: subjects, type of questions and the graphing calculators impact***
Abstract This paper presents some problems and questions that have been assigned in the written exam of the "Liceo Scientifico" state exam in the last two years (2017 and 2018) where the use of non-CAS graphic calculators was allowed. The impact, in Italy of the use of these tools, of the teachers' attitudes towards these tools, the training on graphing calculators and the not very widespread diffusion of the use of these tools in examinations will be presented. We will also consider the possible reasons for the limited use of the graphing calculator. What are the demands of teachers and students?
Technology TI-Nspire CX, TI-Nspire CX CAS
Prerequisites know the TI-Nspire CX calculator (not CAS/CAS) and his Teacher Software; teach math with technology
Hashtag # graphingcalculator, #curriculumMathematics, #graphingcalcuatorexam
Download https://resources.t3europe.eu/t3europe-home/?resource_id=2662

\# P2.2
Room Clarity
Moderator *Jessica Kohout (T³, US), Kevin Spry (Texas Instruments, US)*
Title ***Next Generation Science Standards - 3-Dimensional Learning***
Abstract Within the United States, the national science curriculum has recently introduced a framework for science learning in the classrooms. This “3-Dimensional Learning” covers: cross cutting concepts; disciplinary core ideas; and science and engineering practices. This session will present how this is being implemented and its impact in teaching science in schools in the United States. Sample activities using TI-Nspire will be shared.
Technology TI-Nspire CX, TI-Nspire CX CAS
Prerequisites None
Hashtag #NGSS, #ScienceTeacher, #ITeachScience
Download http://bit.ly/SI19NGSS

\# P2.3
Room Harmony
Moderator *Heidi Liebig, Sonia Reis (both Texas Instruments)*
Title ***T³ website and TI STEM Labs Communication***
Abstract In this presentation we would like to share with you the communication activities we are developing to raise awareness about T³ Europe and TI STEM Labs activities, so that more teachers throughout Europe can know about and take advantage of these programs in their daily teaching practices. We will be looking forward to your feedback and ideas on how to reach more teachers and engage them into STEM innovative practices.
Technology
Prerequisites
Hashtag
Download https://www.t3europe.eu

#	P2.4
Room	Serenity
Moderator	*Mag. Dr. Simon Plangg (University of Salzburg, AT)*
Title	***Symbolic Computation in Teacher Education***
Abstract	The presentation outlines the potential of symbolic computation with regards to teaching and learning mathematics. Thereby two perspectives appear to be relevant: 1) computer algebra systems (CAS) allow students to explore mathematical concepts symbolically and 2) the idea of modelling becomes more important having CAS at hand. CAS increases the number of processable problems enabling students to handle complex calculations. At the same time CAS offers the opportunity to model problems based on informatic principles. Possible outcomes of classes using CAS are the support of concept formation, the development of strategic knowledge and pleasure engaging with mathematics. Didactical principles and methods such as the principle of illustration or the method of discovery learning provide possible approaches to achieving these goals. The presentation illustrates those approaches by providing prototypical tasks coming from technology based teacher education courses held at the university of Salzburg.
Technology	TI-Nspire CX CAS
Prerequisites	Having interest in using computer algebra systems to explore mathematical concepts and problems
Hashtag	#symbolic computation, #teaching and learning mathematics, #teacher education
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2660

#	P2.5
Room	Infinity
Moderator	*Ugur Mert (T³, TR), Tonguç Özdaş (T³, TR), Yunus Emre Dogan (T³, TR)*
Title	***New Generation of Data Collecting Tools with TI Nspire Technologies***
Abstract	In this presentation we share experiences related to data collecting and Mathematical Modeling with TI Nspire and TI Innovator. We will cover the subtitles below: - Coding Innovator with Nspire Technologies - Grove Sensors and Innovator Hub - Real Life problems related to Mathematical Modeling and Data Collecting - Limitations, Challenges and solutions - some Tips&Tricks - Q&A Session
Technology	TI-Nspire CX, TI-Innovator, Vernier DataCollection
Prerequisites	Basic knowledge of TI Nspire
Hashtag	#t3turkiye, #t3europe, #matpaylasim, #edtech
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2642

#	P2.6
Room	Exploration
Moderator	*Christof Deiwiks (Texas Instruments, DE)*
Title	***Exploring the T³ content database***
Abstract	The T³ content database is constantly growing and a lot of exciting content has been distributed through this channel so far. In this workshop I would like to give a deeper insight into the database. We will explore the content, look behind the scenes and will give everybody the opportunity to create their own user account. So after this presentation, each participant will be able to distribute their content right away.
Technology	TI-84Plus CE-T, TI-83 Premium CE, TI-Nspire CX, TI-Nspire CX CAS, TI-Innovator, TI-Innovator Rover, Vernier DataCollection
Prerequisites	None
Hashtag	#contentthatmakesyoufeelcontent
Download	http://resources.t3europe.eu/ https://resources.t3europe.eu/t3europe-home/?resource_id=2661 https://resources.t3europe.eu/t3europe-home/?resource_id=2667

#	P2.7
Room	Innovation
Moderator	*Dr. Florian Stampfer (University of Innsbruck, AT)*
Title	***Natural number biased? A technology-aided identification of profiles with respect to rational numbers understanding.***
Abstract	The use of Audience Response Systems (ARSs) in classrooms has grown rapidly due to the widespread availability of smart phones. Sometimes the collected data are only visualized, sometimes they can be saved, e.g. in a spreadsheet. Seldom the ARSs offer more elaborated analysis tools and hardly ever does the instructor have full control of these. On the input level, the ARS vary from tedious single input to shared repositories to standardized QTI-input options. In this talk, I will present a realisation of an ARS closely linked to the R software environment: Starting from the task generation in R, continuing with the data collection in a compatible web app and ending with a fully controllable feedback function for learners and for the instructor. The benefit of this setting is demonstrated in our recent research on the natural number bias – i.e. a tendency to apply (inappropriately) natural number properties to tasks with rational numbers – of prospective primary teachers in Austria and Germany. The identification of specific profiles in the population enabled us to investigate the effects of an intervention for each profile. In our case, Teaching with Technology offers new opportunities for a data-based math education.
Technology	None
Prerequisites	Smartphone
Hashtag	#natural number bias, #misconceptions, #educational data mining, #learning analytics
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2676

#	P2.8
Room	Klimt
Moderator	*Hans Kammer (T³, CH)*
Title	***Electronics at school beyond the bulb with TI-Innovator***
Abstract	In many Swiss schools pre-university students are still introduced to electric circuits by means of the traditional Edison light bulbs, the so called "Lämplipraktika" (Swiss idiom for “Practicing with light bulbs”). Not the best method, if we consider that traditional bulbs are no longer allowed and that electronics have changed since Edinson’s times! In this workshop a number of simple experiments with the TI-Innovator microcontroller system, the TI-Nspire programming and actual electronic and electric components are presented: switches, discrete LEDs, 7-segment LED displays, relays, buzzers, DIP switches, thermistors etc. This workshop is inspired by the NI-myRIO project essentials from National Instruments (LabVIEW).
Technology	TI-84 Plus CE, TI-Nspire CX, TI-Nspire CXCAS, TI-Innovator
Prerequisites	
Hashtag	# electronics@school, # microcontrollersystem@school
Download	https://resources.t3europe.eu/t3europe-home/?resource_id=2665

#	P2.9
Room	Creativity
Moderator	*Dr. Dilson Rassier, Allyson Noftall (both McGill University, CA)*
Title	***Advancing STEM for student success***
Abstract	Learning science and mathematics can be a major obstacle for students at all levels to succeed in school. It can contribute significantly to the high dropout rates among students coming from low-income families. Advancing STEM is a program created by the Faculty of Education at McGill University that uses new teaching methods to improve STEM education in schools. The first stage of the program was developed in partnership with two Montreal school boards, the Montreal Museum of Fine Arts, the Montreal Science Centre, and schools interested in the program. Rooted on evidence-based research, the program has involved 10 McGill undergraduate students from the Faculty of Education and 8 classrooms in two schools, reaching approximately 250 children. Furthermore, the program placed two PhD students from the Faculty of Science, and three Science Education professors to work in collaboration with the schools to support their curriculum and educational outcomes. The initial evaluation of the program made by teachers, students and school administrators was highly positive. We plan to continue the program and in the near future collect data that can be evaluated and hopefully respond to the basic question that drives the foundations of this work: Can Advancing STEM contribute to decreasing dropout rates in schools?
Technology	
Prerequisites	
Hashtag	
Download	>add link<

Closing

Room Ballroom
Date/Time Sunday Mar 31, 11.30 – 13.00

\# C1
Moderator *Adina Nistor (European Schoolnet, BE)*
Title ***STEM Education Policies and Practices in Europe - main findings from two Scientix Observatory reports***
Abstract The presentation provides an overview of the main findings of two Scientix Observatory reports which illustrate the state of play of Science, Technology, Engineering and Mathematics (STEM) education at the European level, from two complementary perspectives. The STEM Education Policies in Europe report (October 2018) looks at the place of STEM in 14 European education systems, highlights main trends of public education and proposes a number of general observations and synthetic recommendations. Taking a grassroots approach, the STEM Education Practices in Europe report (December 2018), presents information about how STEM teachers throughout Europe organise their teaching practices. The two reports were developed by Scientix, the community of science education in Europe, with the support of European Schoolnet and Texas Instruments
Technology
Hashtag @scientix_eu
Download http://www.scientix.eu/observatory/stem-education-practices-europe

\# C2
Moderator *Prof. Dr. Gultekin Cakmakci (Hacettepe University Ankara, TR)*
Title ***STEM Education Research***
Abstract With little agreement across nations as to the nature of STEM there is a concomitant difficulty when it comes to researching STEM education. Teachers already have little confidence in the outcomes of research so work in STEM education research is even more difficult. I will present some possible solutions using my experiences in Turkey and involvement with the Europe wide STEM PD net.
Technology
Hashtag
https://stempd.net/
Download http://www.hstem.hacettepe.edu.tr/en

\# C3
Moderator *Ian Galloway (T³ Europe)*
Title ***The Power of Realization***
Abstract We will bring to a close four days of intense discussion around STEM education and the ability of modern technology to help students realize the world around them. Starting with policy makers and those who influence the structure and content of educational programmes we moved to the educators and those who style themselves as practitioners. We have shared ideas in discussion groups, workshops play-stations and presentations and it is my task to ask you to build upon this over the next two years.
Technology
Hashtag
Download https://resources.t3europe.eu/t3europe-home/?resource_id=2691

About T³ Europe and Sharing Inspiration

T³ Europe is the European branch of a worldwide educator network. T³ [T-cubed] stands for Teachers Teaching with Technology. It was founded 30 years ago by the professors Bert Waits and Frank Demana from Ohio State University, Columbus, Ohio.

T³ Europe is an association of STEM (Science, Technology, Engineering and Mathematics) teachers that serves as an umbrella body for 12 country organizations to provide quality professional development, classroom-proven content and integrated state-of-the-art classroom pedagogy. For more than 20 years, T³ Europe has fostered a culture of cooperation, collaboration and sharing of expertise among educators from classroom teachers to policy makers.

The European T³ network consists of ~250 educators, all with teaching practice background. They are using technology in their classrooms every day and share their experiences in various formats of professional development and educational content. Many T³ instructors are leading members of their own country math and science organizations or work as authors for textbook publishers besides their normal teaching duties. Over its long establishment the network has built a great deal of expertise in curriculum and exam development, which it shares with ministries and other public institutions like curriculum commissions or exam boards.

From its early days T³ has been a cooperation with Texas Instruments. Texas Instruments provides organizational and financial support, allowing the educators to focus on classroom education, development of pedagogical concepts and dissemination. In return Texas Instruments benefits by being constantly briefed on its classroom technology which reflects state-of-the-art pedagogical standards.

T³ Europe is structured in country organizations, which foster in and within country collaboration and exchange. Besides a permanent virtual exchange the European network meets every second year for a conference titled “Sharing Inspiration”. The 2019 conference theme will be “The Power of Realization”. The conference theme has a double meaning: “to realize” in the sense of “to understand” and also in the sense of “to make something concretely happen”, reflecting pedagogical efforts around “Coding” and “Making”.

More information: www.t3europe.eu

About TI STEM Labs

The TI STEM Lab Network is a group of general and vocational secondary schools across Europe with a strong profile in STEM education. It is a platform for collaboration among the network schools and with national and international STEM initiatives. Teaching and learning content will be developed, evaluated and shared for adoption in everyday classrooms. The network cooperates with policy-makers, and curriculum and exam commissions to enhance next-generation curricula. In times of accelerated digitalization, the network promotes the indispensable relevance of strong STEM education for every student. Pedagogical quality standards for the network are set and controlled by T³ Europe in cooperation with partner universities.

TI STEM Lab schools explore new integrative ways in math, science, computer science and engineering education. The network serves as platform to exchange practical experience on national and international level. Knowledge transfer happens in means of professional development and by dissemination of educational content.

More information: www.t3europe.eu/tistemlabs

About Texas Instruments

About Texas Instruments Education Technology

For more than 30 years, TI has been an active member of classrooms around the world, empowering teachers and inspiring students to succeed in mathematics and science. Through our calculators, coaching and classroom resources, TI Education Technology is transforming the way teachers teach and students learn STEM (science, technology, engineering and mathematics) subjects. With our award-winning products, engaging lessons, real-time assessment and top-notch professional development, TI is leading the way in mathematics and science education.

About Texas Instruments
Texas Instruments has a 75-year history of innovation with a strong commitment to education. Our corporate commitment to STEM education started with the company's founders and remains stronger than ever today. We believe in investing in education in order to fuel the talent base needed to continue advancing engineering innovation across the world. Our commitment to education is a strong part of our legacy, and remains one of our highest priorities.

More information: education.ti.com/europe

Conference part for Policy Makers

The first day (Thursday March 28) of the Sharing Inspiration conference is specifically designed for policy makers, industry stakeholders, key decision makers and leading educators from across Europe. We expect 100+ participants exchanging about classroom implementation and structural questions regarding improved STEM education.

The conference has been initiated by T³ Europe. It is organized in collaboration with the following Conference partners (in alphabetical order)

Materials shared at Sharing Inspiration for Policy Makers:
https://resources.t3europe.eu/t3europe-home/?resource_id=2678