

Low-cost Experiments increasing access to hands-on science in your home and around the world

Michael Gregory

10/02/2021



SCIENTIX

The community for science
education in Europe

The work presented in this document is supported by the European Commission's H2020 programme – project Scientix 4 (Grant agreement N. 101000063), coordinated by European Schoolnet (EUN). The content of this document is the sole responsibility of the organizer and it does not represent the opinion of European Schoolnet or the European Commission (EC), and the EC is not responsible for any use that might be made of information contained herein.

Low-Cost Experiments - where and why?



Photo by Paul Doherty, Exploratorium TI



My Favourite Experiments

Everyone has at least one experiment to get excited about.

Write the name of one of your favourite experiments in the chat.



My Favourite Experiments

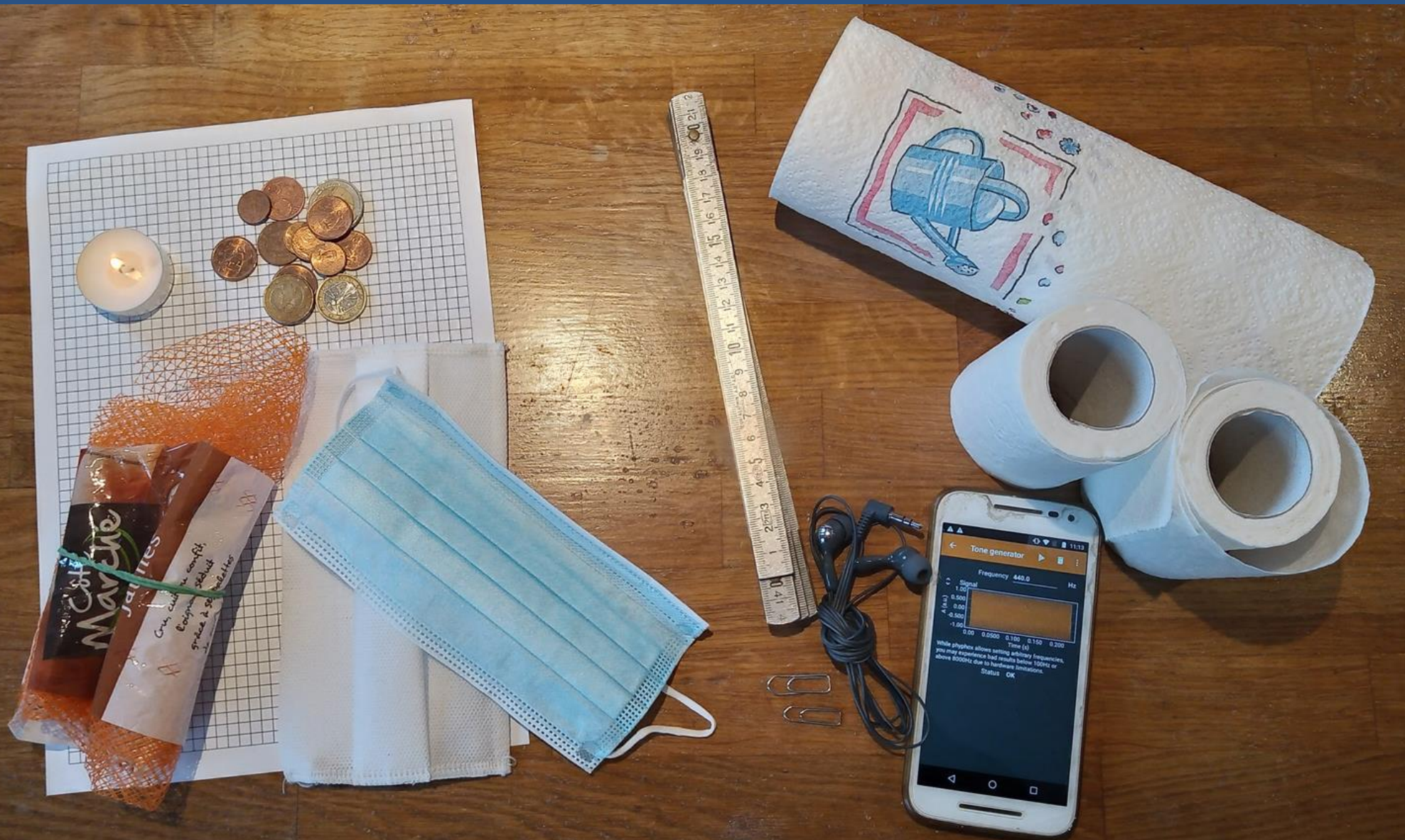
Everyone has at least one experiment to get excited about.

Write the name of one of your favourite experiments in the chat.

Where did you get the idea for that experiment?



Recommended Materials

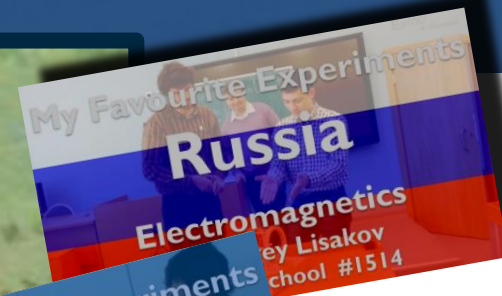


Cross-Canada 2017 - the birth of MFE

13 weeks
10000 km
9 museums
5 universities
>100 educators



Europe 2018



20 countries
±10000 km
±10 universities
>20 museums
100s of educators
and experiments



2019 - UNESCO, Ghana and YES!



Понекад користим модел болести
као метафору за ширење добрих идеја,

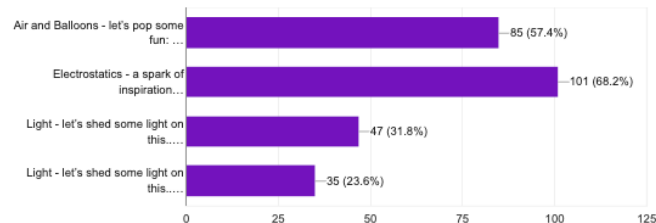
2020 - Virtual Science Camps

MFE Virtual Science Camp week 0

Questions Responses 149

For which sessions would you like to sign up:

148 responses

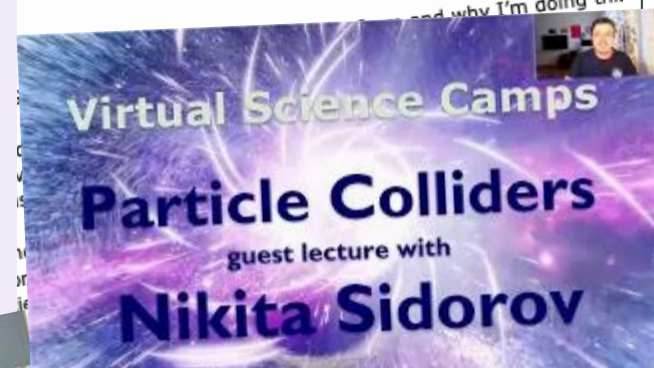


Are there any of the recommended materials you expect to have trouble finding?

125 responses



Virtual Science Camp - Welcome!
 Join science from around the world into your home, 40-min
 This page: <https://tinyurl.com/VirtualScienceCamp>
 Past Camps: <https://tinyurl.com/VSC-PastCamps>
 Playlist of recorded camps: <http://tinyurl.com/VSC-Pla>
 Mailing List: <https://tinyurl.com/VSC-Mailing>



Hands-on Sessions Saturdays 18:00 - 18:45 (Paris time) recommended ages 10 to 14 With experiments to do at home using the list of recommended materials.		Guest Lecture Sessions Tuesdays 18:00 - 19:00 (Paris time) recommended ages 12 to 16 With guest hosts from around the world	
9/01	Launch of Particle Physics for Kids https://youtu.be/RxQ27Yn6asQ	12/01	It's Just a Phase Science Show hosted by Anja and Sarah, CERN's S'Cool Lab, Geneva, Switzerland
16/01	Phase Changes in the Kitchen https://youtu.be/WCZDIK2IKJA	19/01	Introduction to CERN Guest host Jeff Wiener, CERN, Geneva, Switzerland https://youtu.be/otvQVs9197E
23/01	Modelling Magnification	26/01	The Big Bang Theory. The Evolution of the Universe Guest host: Dmitry Denisenko, JINR, Dubna, Russia
30/01	Intro to Electromagnetism Recommended materials: Superconductors		
6/02	Measuring the Speed of Light A slight diversion from particle physics, but a current favourite		



Experiment #1 - Face Masks



Face Mask - Results

For weave twice as wide as droplets

1 layer of cloth

25% of droplets get through

75% of droplets blocked

2 layers of cloth

25% of 25% of droplets

= 6.25% of droplets get through

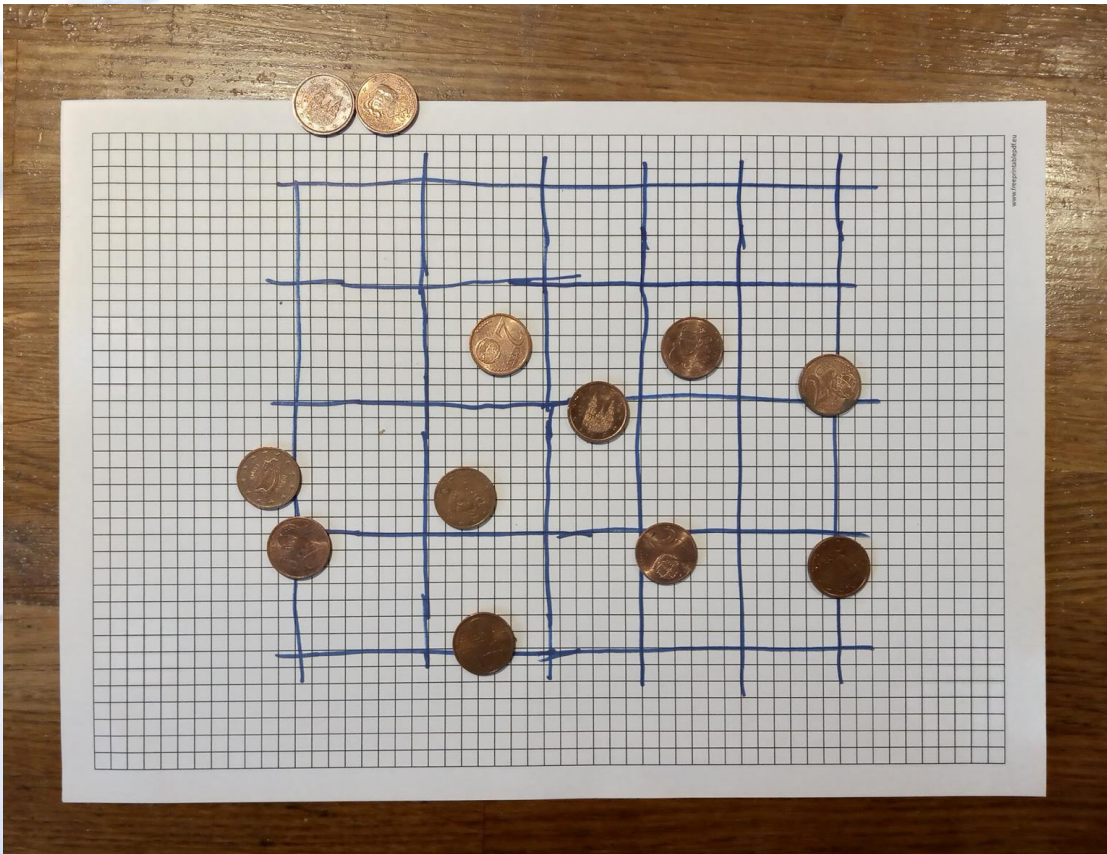
93% of droplets blocked

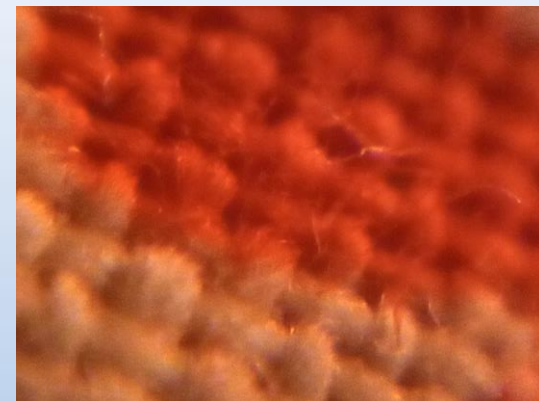
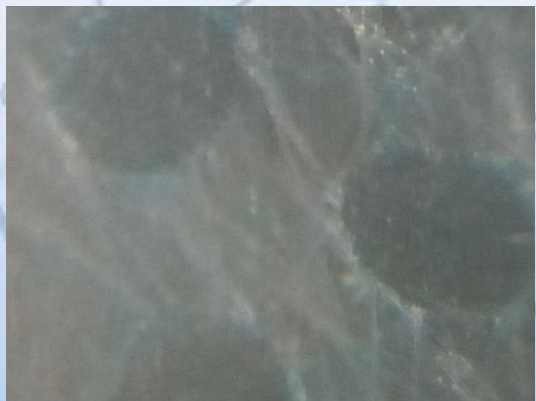
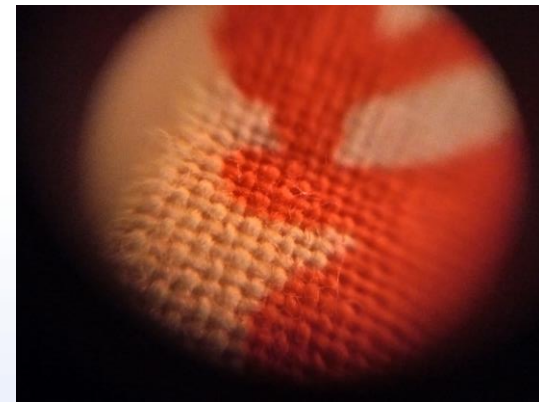
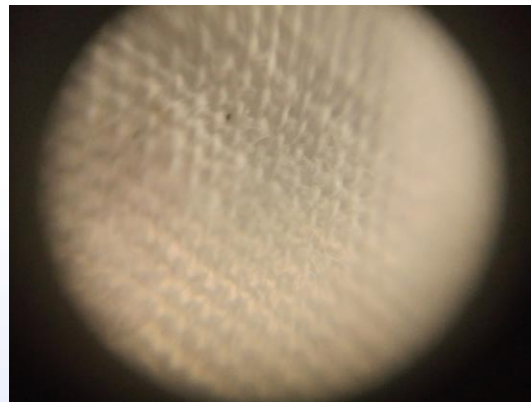
3 layers of cloth

25% of 6.25% of droplets

= 1.5% of droplets get through

98.5% of droplets blocked





Experiment #2 - Measuring Sound



Link to tone generator:

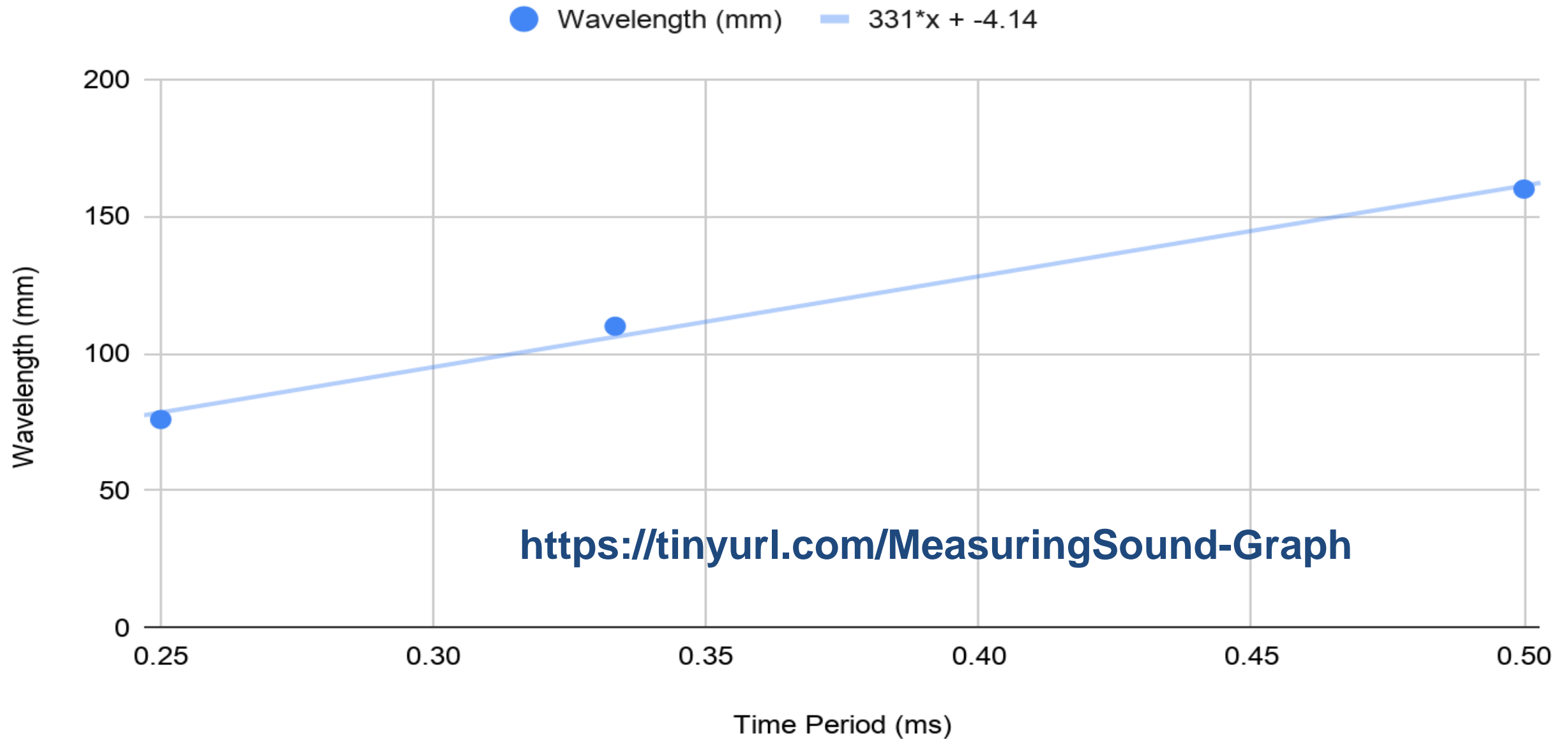
<https://www.szynalski.com/tone-generator/>

Link to share results:

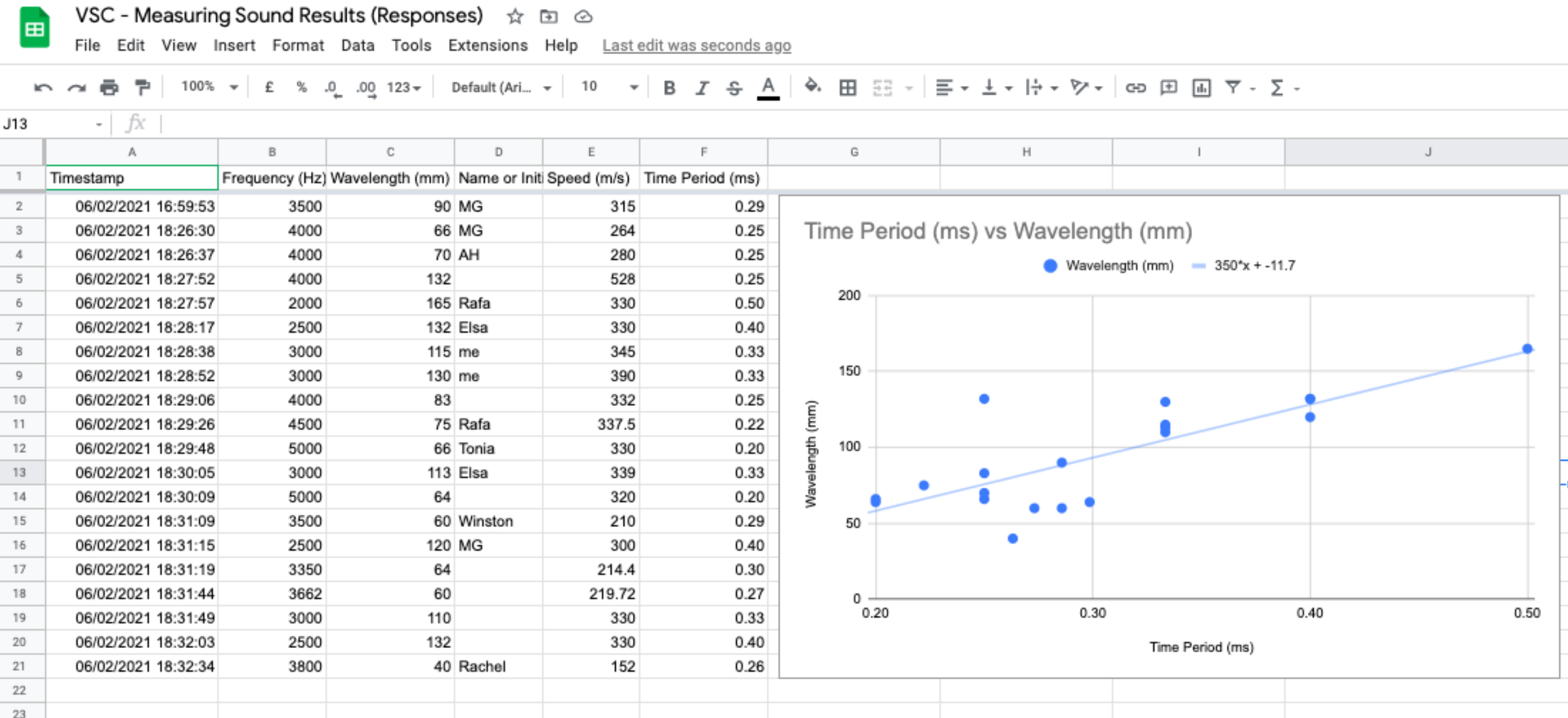
<https://tinyurl.com/MeasuringSound-Results>



Time Period (ms) vs Wavelength (mm)



Results from Saturday's Virtual Camp



Pyramid of Participation



REPEAT - more detail on experiments shown

VSC on Face Masks 28/11/20: <https://youtu.be/YKVE8xRltFc>

VSC on Measuring Sound 6/02/21: <https://youtu.be/-VS5c1QWINS>

Cardscope: <https://tinyurl.com/MG2017-Microscope-Video>

Beer-Bottle Thermometer:

at DDD: <https://youtu.be/GTekxAWYdrU>

in Ghana: <https://youtu.be/B1V0pCuYftY>



SHARE - some sources for today's experiments

It's Okay to be Smart - COVID-19 & Mask Myths DEBUNKED!

<https://youtu.be/npXP5wqNzal>

Physics Girl - 5 Weird Ways to Put Out a Candle

<https://youtu.be/WainnKKtGZI>

Physics in Advent - Inspiration for measuring sound (3/12/20) www.physics-in-advent.org/calendar



SHARE - my favourite sources of inspiration

Exploratorium Teacher Institute: <https://www.exploratorium.edu/snacks>

Perimeter Institute: <https://www.perimeterinstitute.ca/outreach/teachers>

CERN Education: <https://teacher-programmes.web.cern.ch/>

Canada Agriculture and Food Museum: <https://ingeniumcanada.org/agriculture>

Fisica Demos (in Spanish): <https://fisicademos.blogs.uv.es/>

DDD (in Spanish): <https://dddivulgar.com/experimentos-desde-el-confinamiento/>

Timor Pratika: <https://timorpratika.wordpress.com/>



CONNECT with me

Virtual Science Camps

tinyurl.com/VirtualScienceCamp

Active Science - Online workshops for Teachers:

<https://tinyurl.com/ActiveSci>

YOUTUBE: youtube.com/MyFavouriteExperiments

#VSC #MFE #virtualsciencecamp

EMAIL: myfavouriteexperiments@gmail.com



Thank you!



SCIENTIX

The community for science
education in Europe



The work presented in this document is supported by the European Commission's H2020 programme – project Scientix 4 (Grant agreement N. 101000063), coordinated by European Schoolnet (EUN). The content of this document is the sole responsibility of the organizer and it does not represent the opinion of European Schoolnet or the European Commission (EC), and the EC is not responsible for any use that might be made of information contained herein.