Experiments in Biology Lessons

Data Collection while experimenting -
Easy, fast and in a visual way
with an TI graphing or CAS Calculator

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T³ DEUTSCHLAND

The Team

BiuTi

Biologie und Technologie

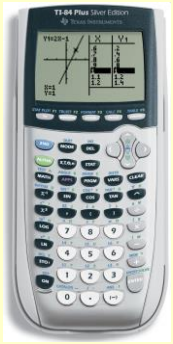
– Materialien für den Biologieunterricht –

T³ DEUTSCHLAND

A project from Lower Saxony / Germany - startet in August 2007

We develope materials for biological experiments using the following technologies

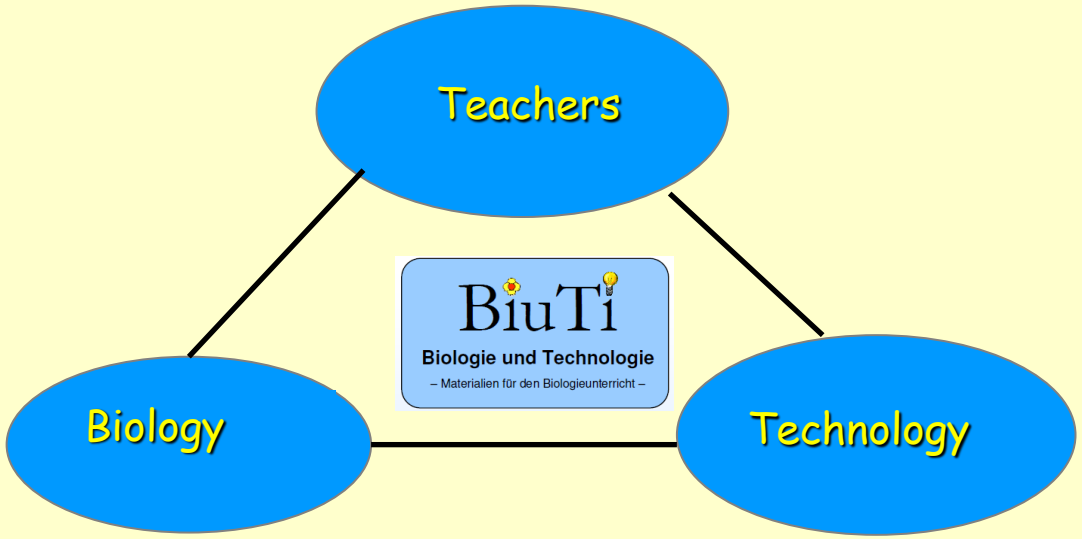
- TI-84 Plus family
- Nspire™ family



and interfaces

easyLink™ , LabCradle

Research Objectives



Selection of experiments

Below you find on the sheets the experiments shown at the PlayGround in the context of Sharing Inspiration. Further experiments you can see in a brochure or on the TI website:

Lampe, Hans-Ulrich (Hrsg.): Der Einsatz von Graphikrechnern und Taschencomputern im Biologieunterricht. T³ Verlag, 2013

*(*http://www.ti-unterrichtsmaterialien.net/nc/materialien/?resource_id=1200)

Why Digital Tools in Biology Lessons?

BiuTi
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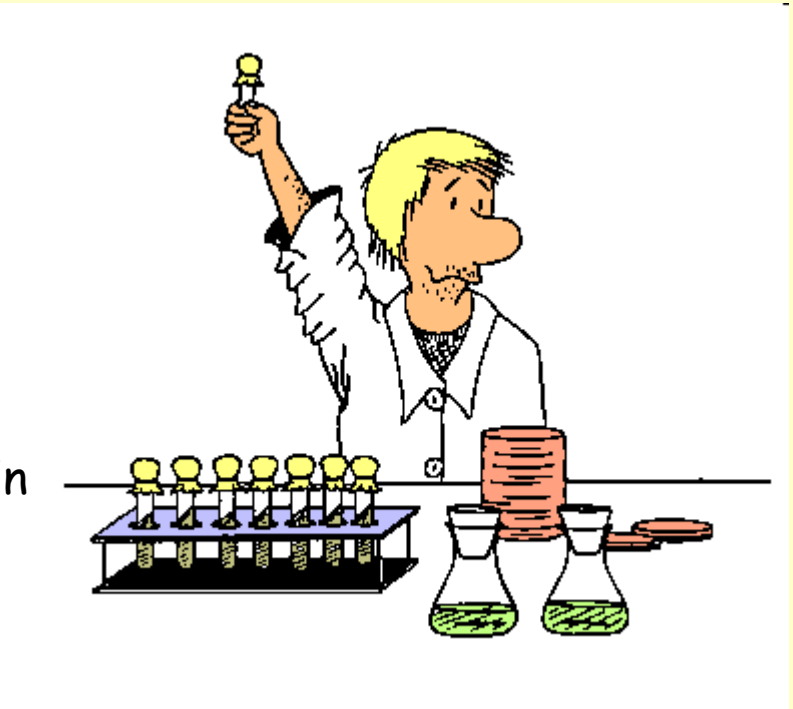
… you are working with a battery-operating system, so you can use it in the field.

… the calculator is in every schoolbag.



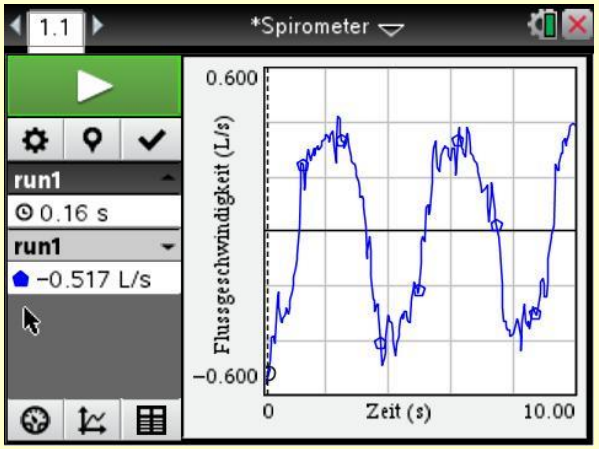
… you can see the genesis of real data in experiments.

… you can illustrate the experiment results in a easy way.

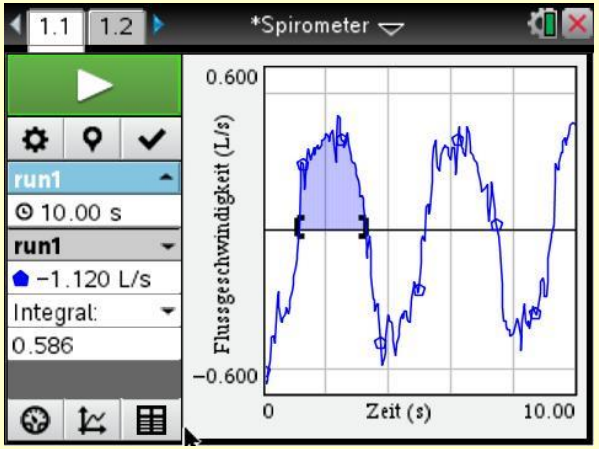
… the students are instructed with the calculator for example in mathematics.

… tabular and graphical representations characterise the sience literature.

Respiratory Volume



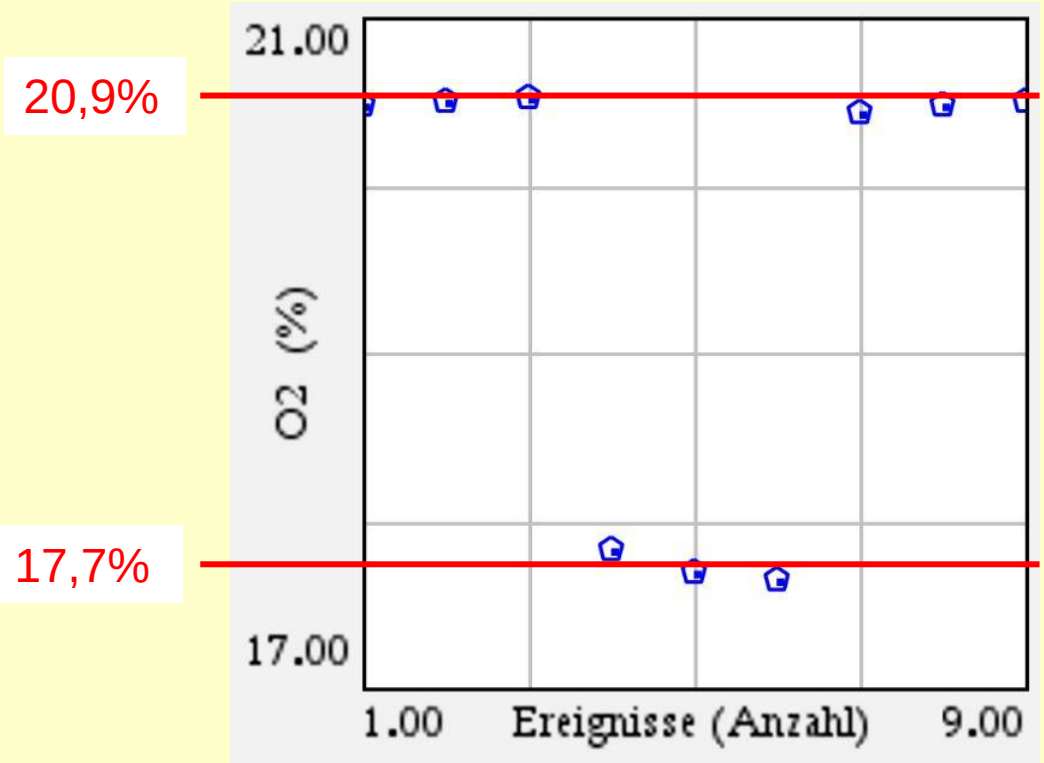
Zeitbasiert
Intervall (Sekunden/Stichprobe): 25
Dauer (Sekunden): 10



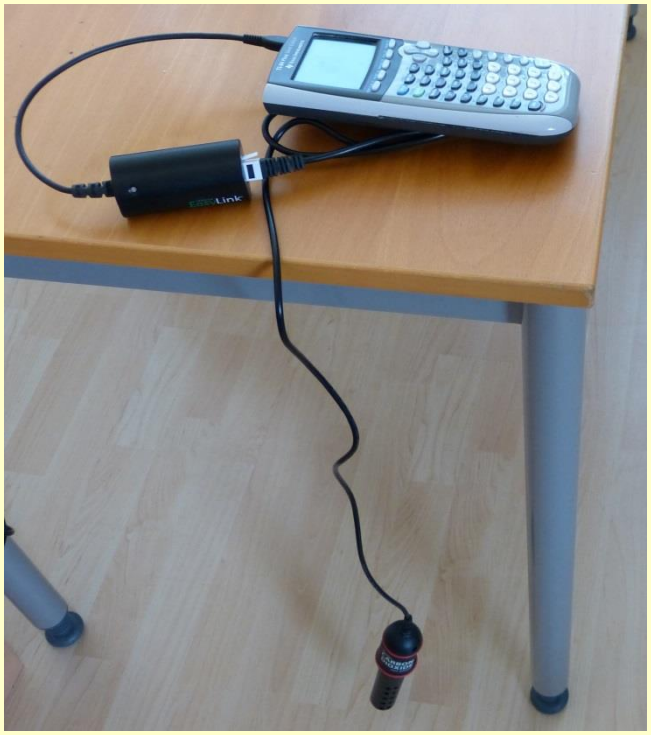
Oxygen in the Exhalation Air

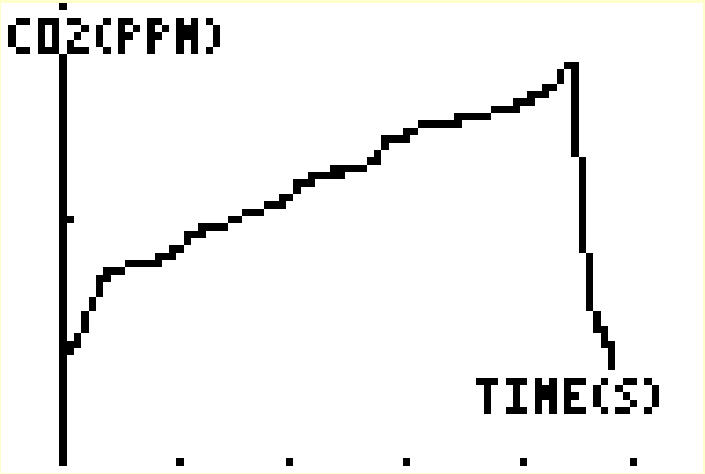
Mode: Selected Events
3 single shots with ambient atmosphere
3 single shots with exhalation air

The first three points are the values for the ambient atmosphere, the following three points are the values from the exhalation air.



Concentration of Carbonic Acid Gas in the Classroom

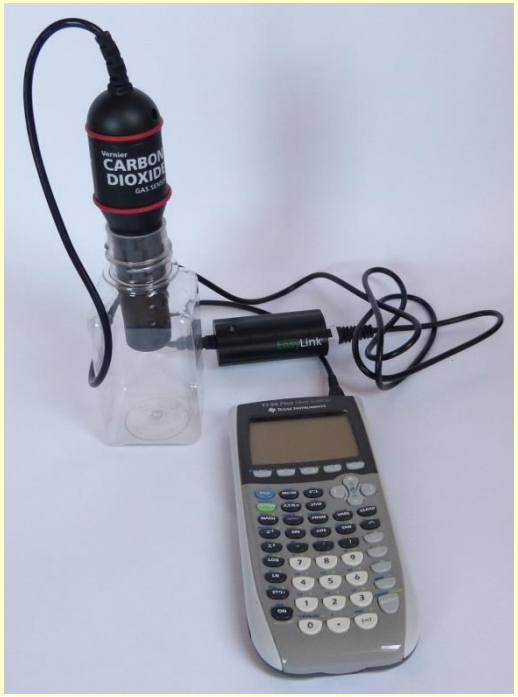


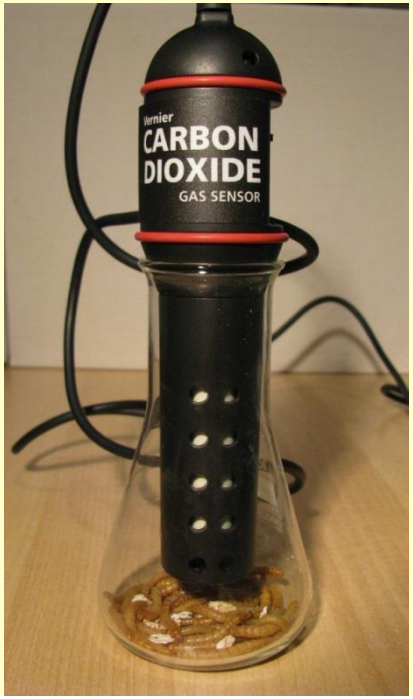


Classroom V = 177 m^3
Inital Value of 1197 ppm CO_2, viz. ca. 211,9 l
after 50 minutes 2969 ppm CO_2 , viz. ca. 525 l

If there are 28 persons in the room, they produce around 322 l CO_2 in 50 minutes.
That correspond to a total volume of 524 l in the room.

Respiration of Mealworms Depending on Temperatur





CH 1: CO2 GAS(PPM)
MODE: TIME GRAPH – 600
TIME INTERVAL: 60 sec

Ansatz 1 (L2): 8°C
Ansatz 2 (L3): 20°C
Ansatz 3 (L4): 40°C

L1	L2	L3 1
0	1455	1420.6
60	1467.3	1616.1
120	1479.5	1713.9
180	1479.5	1750.5
240	1479.5	1933.8
300	1479.5	2007.1
360	1479.5	2056

L1 ={0,60,120,18...

L2	L3	L4 4
1455	1420.6	1417.4
1467.3	1616.1	1588.5
1479.5	1713.9	1808.4
1479.5	1750.5	2003.9
1479.5	1933.8	2175
1479.5	2007.1	2407.1
1479.5	2056	2578.2

L4 ={1417.4,1588...

Abb. 1

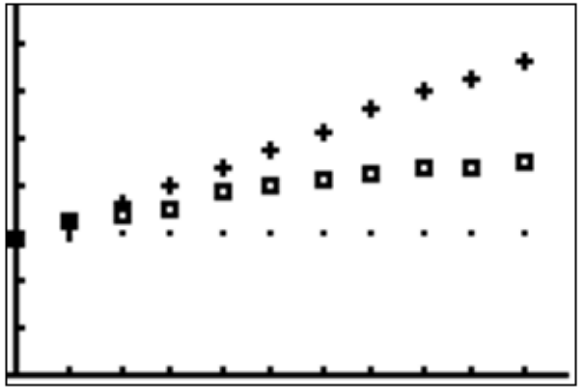
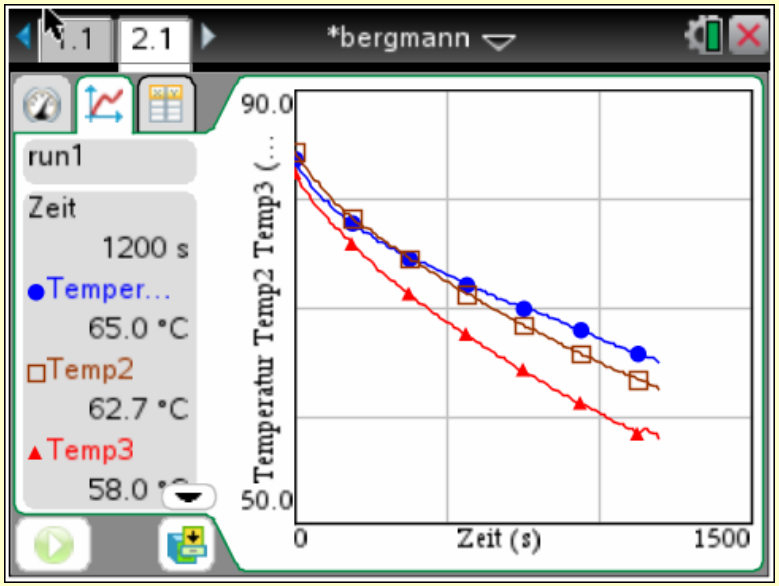
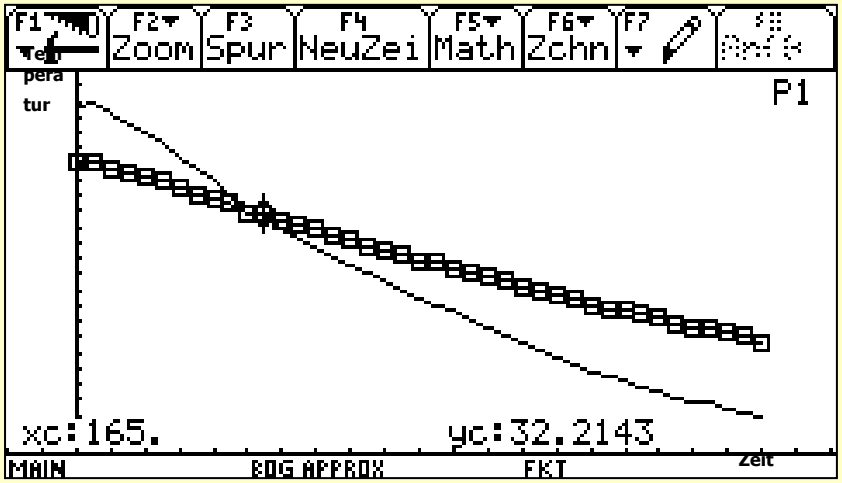


Abb. 2

Climate Rule of BERGMANN



Zeitbasiert
Intervall (Sekunden/Stichprobe): 10
Dauer (Sekunden): 1200



Feel free to contact me for further informations:

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Thank you for your interest