

Moderní technologie ve školství

Chytré “hračky” ve škole

Zdeněk Heteš
hetes@zsmltu.cz

ZŠ Mládežnická
TRUTNOV

Vašek Fišer
fiser@zskomtu.cz

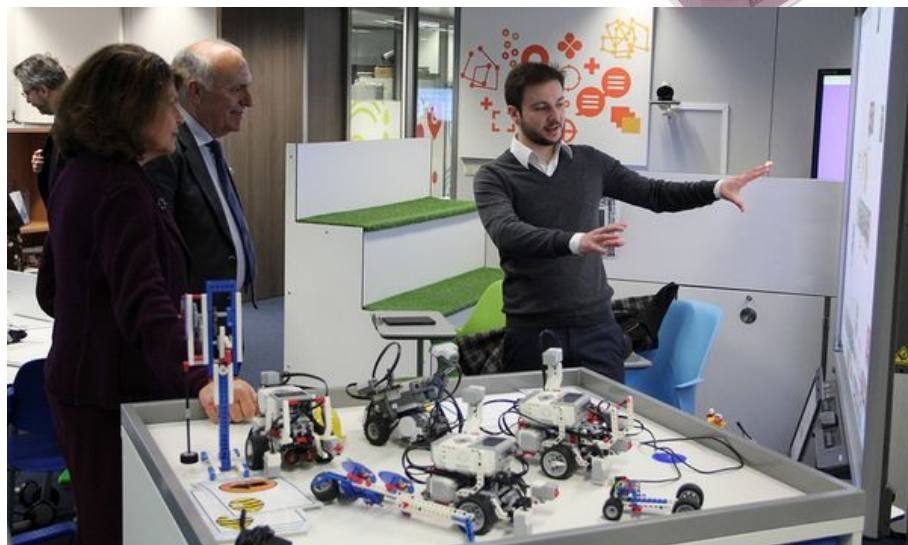
ZŠ Komenského
TRUTNOV

Dnešní menu

1. chytré stavebnice
2. roboti a robůtci
3. online nástroje i ne-online
4. 3D tiskárny
5. nezapomínejme na nejmenší
6. Pojd'me si hrát

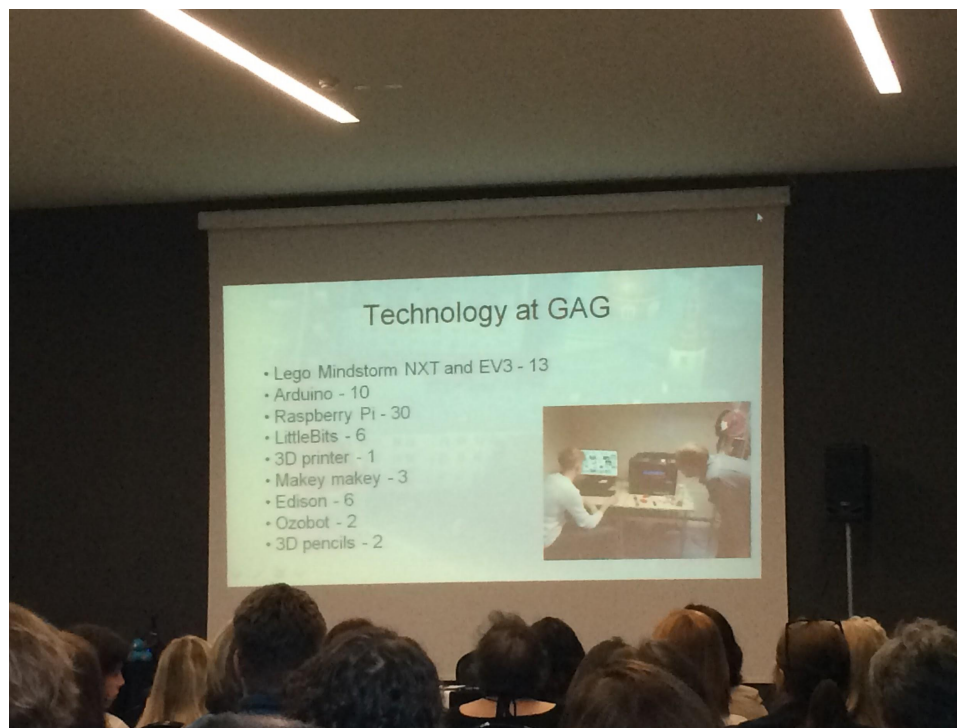


Future
Classroom Lab
by European Schoolnet



Kurzy ve FCL - www.etwinning.cz

Coding and robotics - eTwinning meeting Braga - Portugalsko 2016



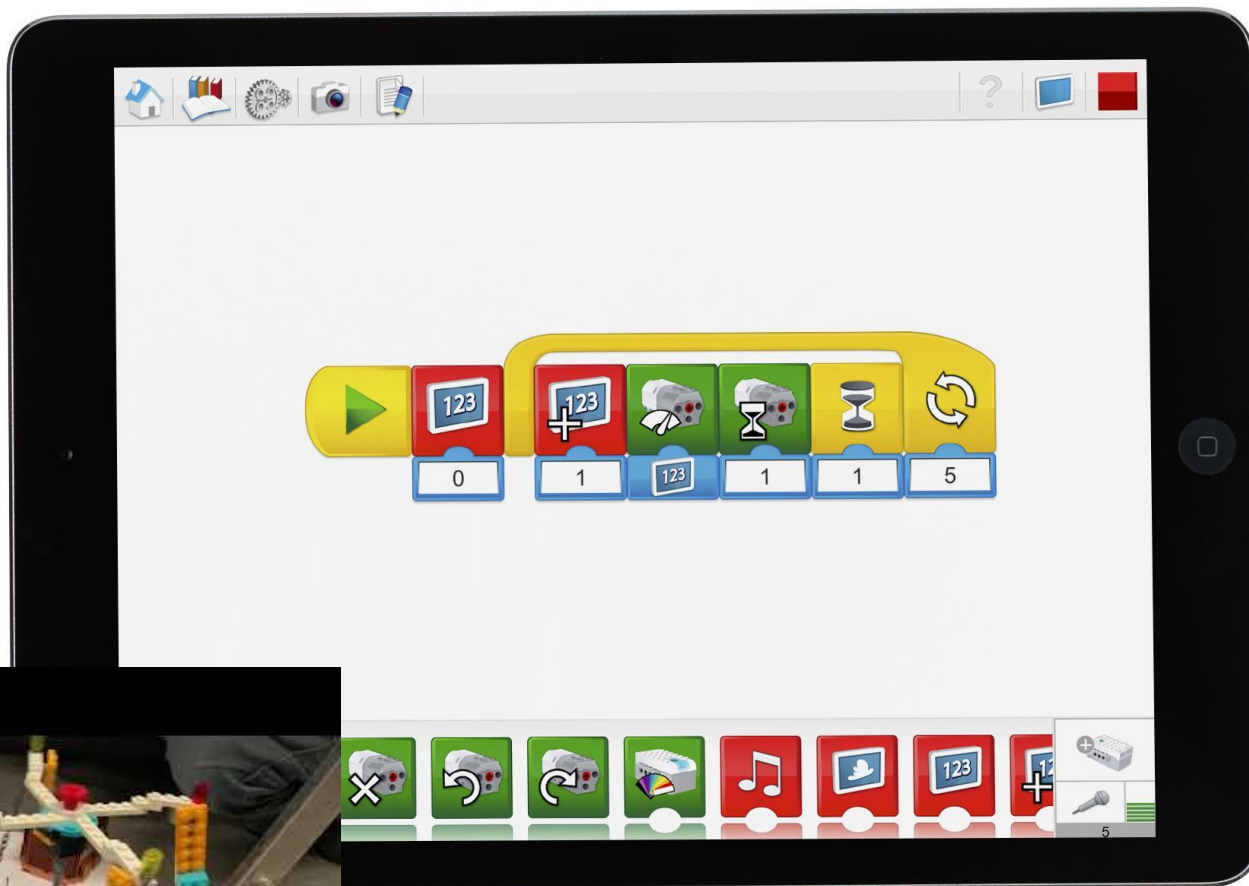
www.etwinning.cz

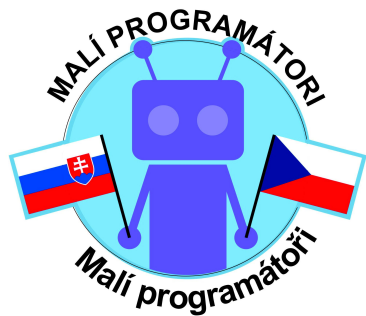
www.etwinning.net



Lego We-Do 2

cca 4500,- Kč







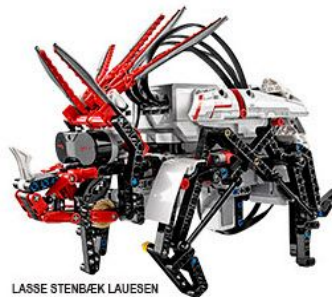
LEGO Boost - 3700,-



RICARDO OLIVEIRA



MARTYN BOOGAARTS



LASSE STENBÆK LAUSEN



KENNETH RAVNSHØJ MADSEN



VASSILIS CHRYSANTHAKOPOULOS



RALPH HEMPEL



MARK CROSBIE



DANIELE BENEDETTELLI



KENNETH RAVNSHØJ MADSEN



MARTYN BOOGAARTS

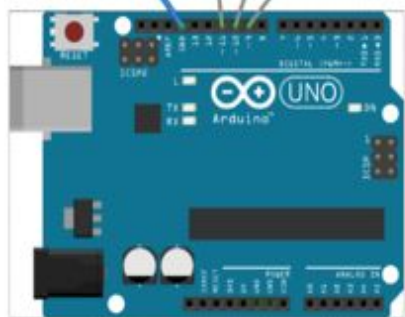
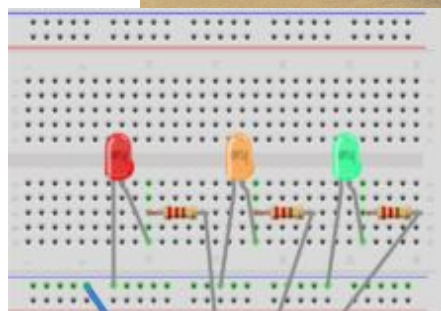
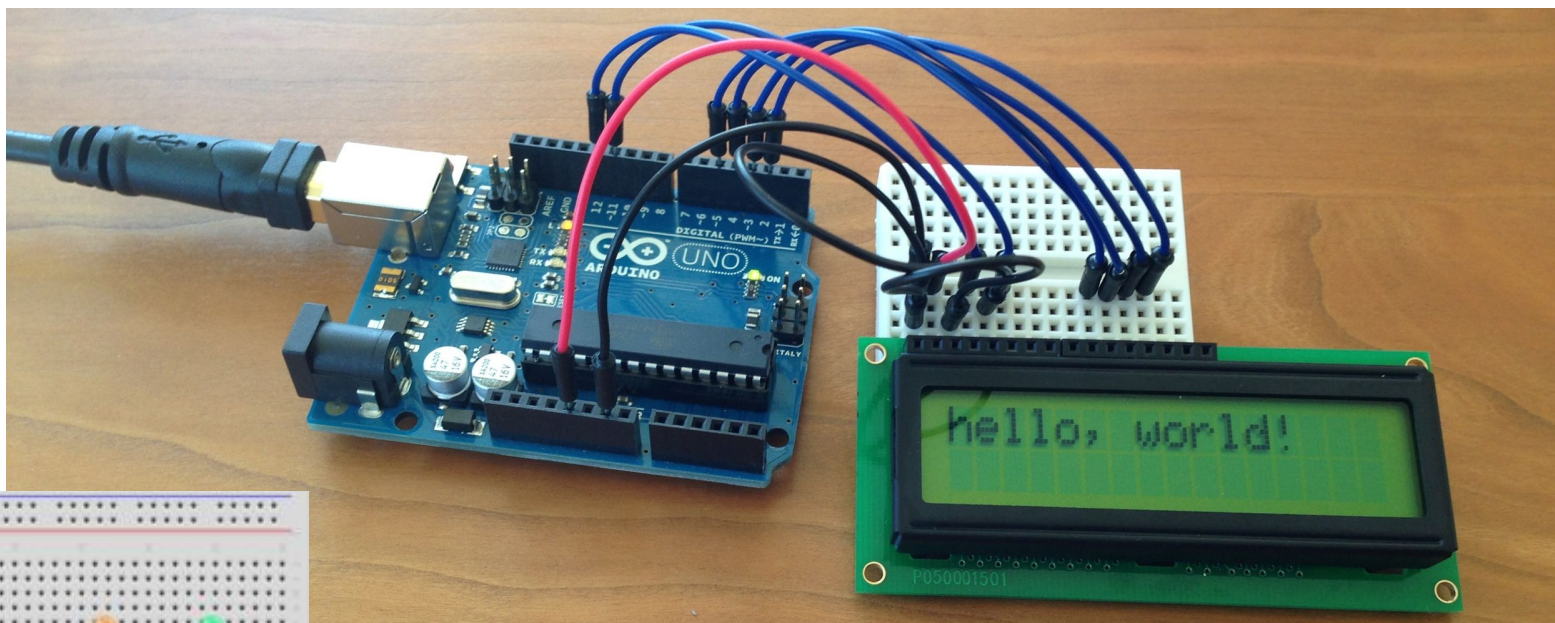


LAURENS VALK



MARC ANDRÉ BAZERGUI

Lego Mindstorms EV3 cca 11599,- Kč



fritzing

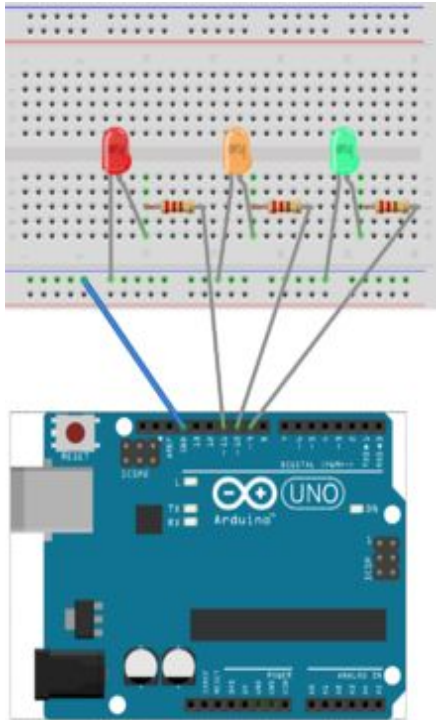
Arduino cca 2700,- Kč

Activity 2: ..and beep a buzzer

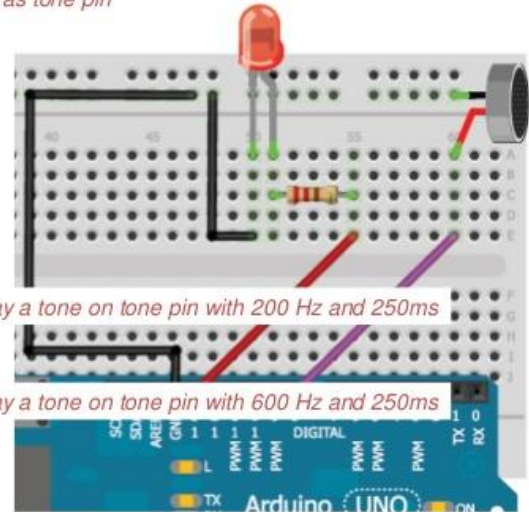
```
int ledPin = 13;  
int tonePin = 8; Assign pin 8 as tone pin
```

```
void setup()  
{  
  pinMode(ledPin, OUTPUT);  
}
```

```
void loop()  
{  
  digitalWrite (ledPin, HIGH);  
  tone (tonePin, 200, 250); Play a tone on tone pin with 200 Hz and 250ms  
  delay (500);  
  digitalWrite (ledPin, LOW);  
  tone (tonePin, 600, 250); Play a tone on tone pin with 600 Hz and 250ms  
  delay (500);  
}
```



fritzing



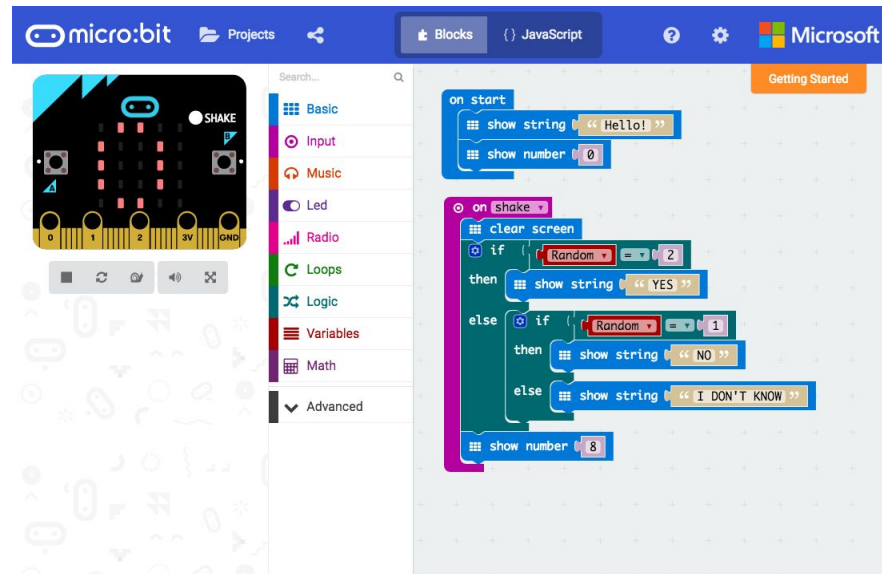
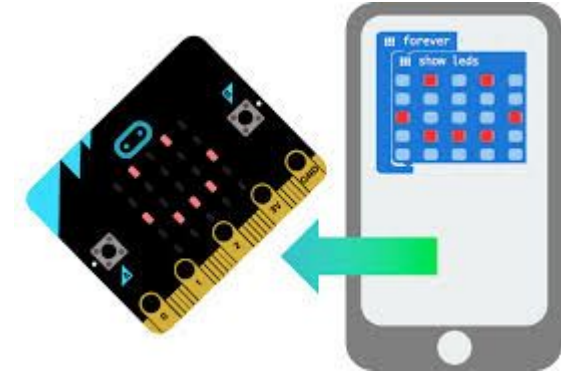
<https://www.arduino.cc/>

Arduino cca 2700,- Kč

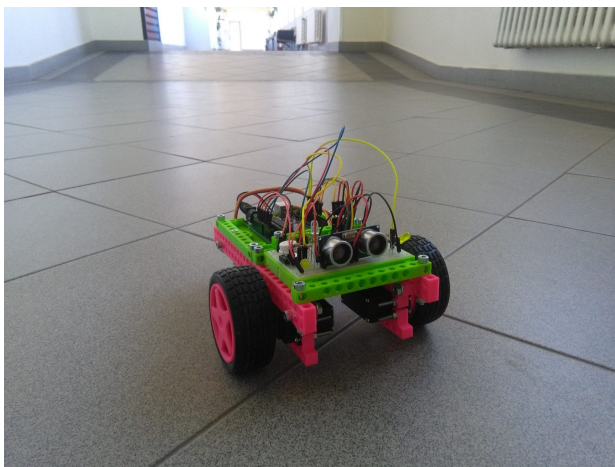
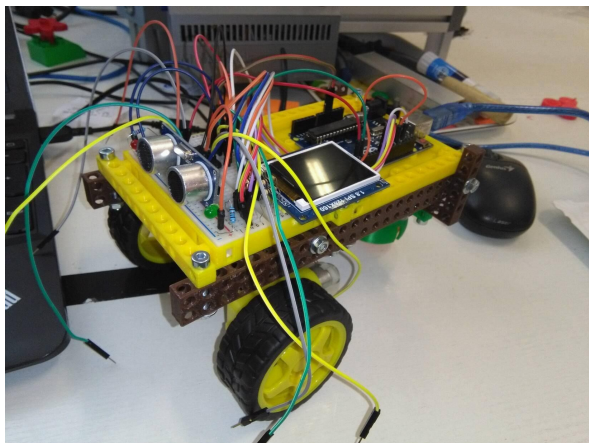
micro:bit

<http://microla.cz/>

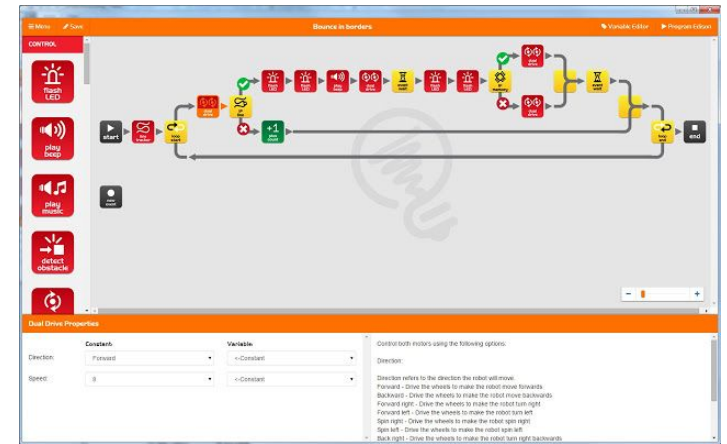
- programování bloky/JavaScript nebo Python
- integrované senzory



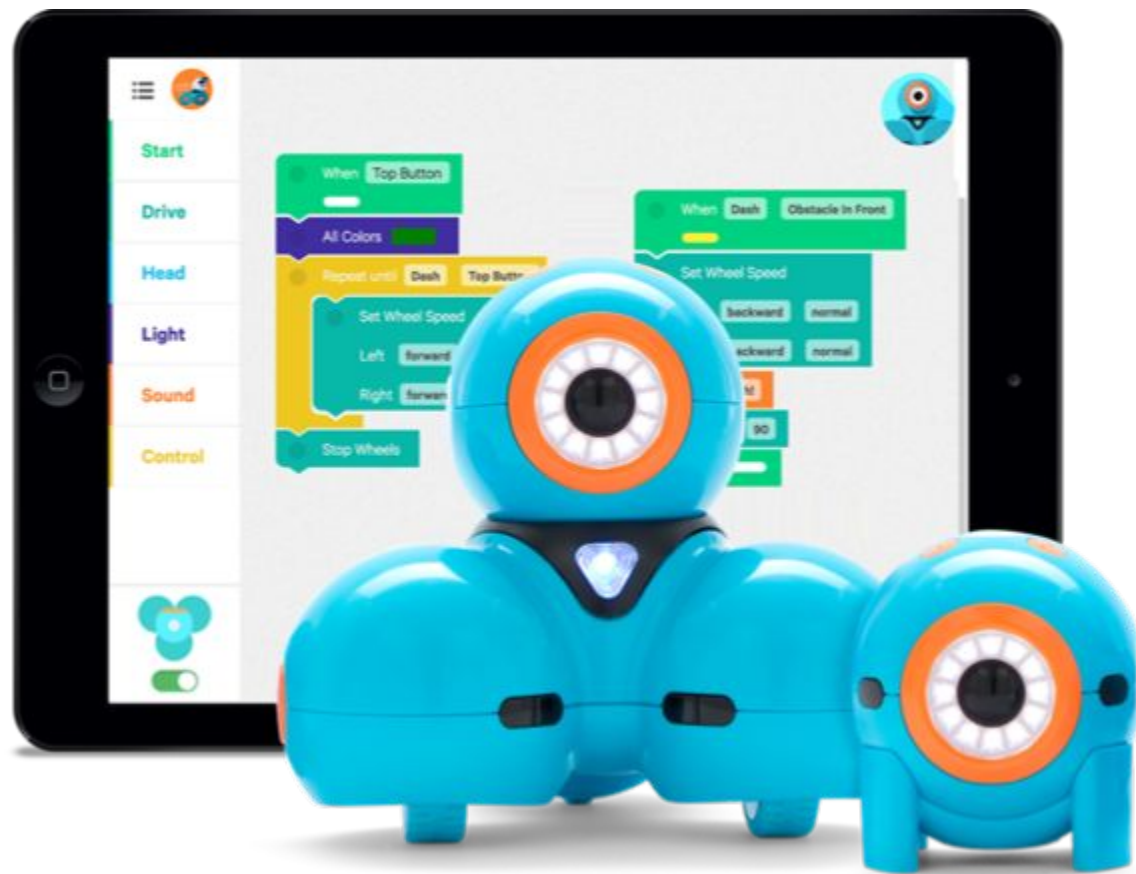
Open Source - m-bitBeam a Arduino



2016 © Tomáš Feltl (www.e-mole.cz)



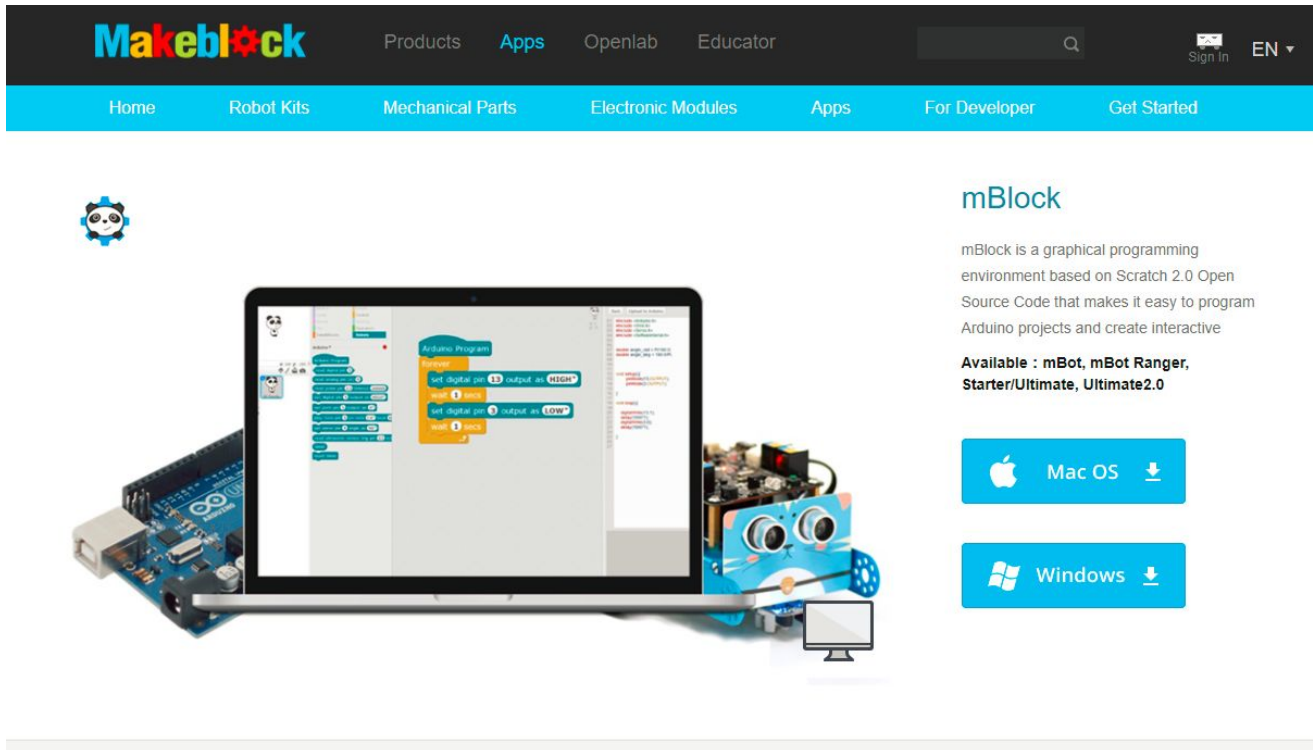
Edison 1500,- Kč



Dash & Dot 5 - 7tis



<http://store.makeblock.com/stem-education>

The banner for the mBlock website. At the top is a dark navigation bar with the Makeblock logo, links for Products, Apps, Openlab, and Educator, a search bar, and a sign-in button. Below this is a light blue bar with links for Home, Robot Kits, Mechanical Parts, Electronic Modules, Apps, For Developer, and Get Started. The main content area features a large image of a laptop displaying the mBlock graphical programming interface, which shows a sequence of code blocks for controlling an Arduino. To the left of the laptop is an Arduino Uno board, and to the right is a small blue robot with large eyes. To the right of the image, the text "mBlock" is followed by a description: "mBlock is a graphical programming environment based on Scratch 2.0 Open Source Code that makes it easy to program Arduino projects and create interactive". Below this, it says "Available : mBot, mBot Ranger, Starter/Ultimate, Ultimate2.0". At the bottom right are two blue buttons for downloading the software on "Mac OS" and "Windows".

Makeblock Products Apps Openlab Educator

Home Robot Kits Mechanical Parts Electronic Modules Apps For Developer Get Started

mBlock

mBlock is a graphical programming environment based on Scratch 2.0 Open Source Code that makes it easy to program Arduino projects and create interactive

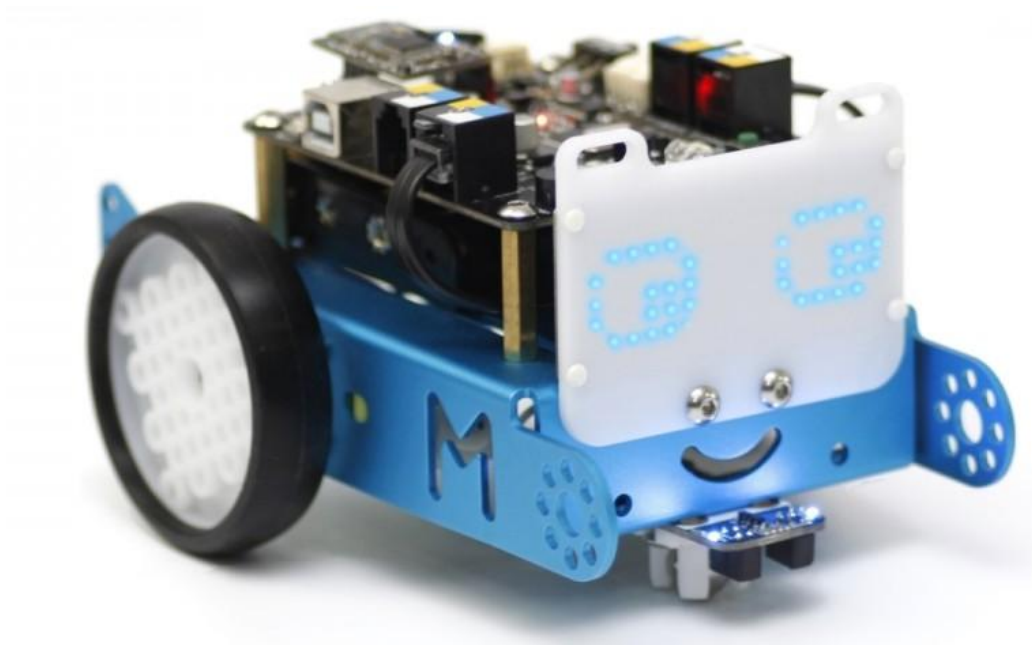
Available : mBot, mBot Ranger, Starter/Ultimate, Ultimate2.0

Mac OS

Windows



- Podpora platformy Arduino
- Vyhýbá se překážkám
- Jezdí přímo po čáře
- Robustní konstrukce
- Jednoduché grafické programování
- Ovládání z mobilní aplikace nebo
dálkového ovladače
- Komunikace s chytrým zařízením přes
Bluetooth nebo WiFi
- Kompatibilní s LEGO



<http://www.makeblock.com/mbot-v1-1-stem-educational-robot-kit>

Mbot 3 000Kč

Programovatelný dron, vznášedlo nebo cokoli...

AIRBLOCK

THE EASIEST PROGRAMMABLE &
CONVERTIBLE DRONE



Makeblock
Construct Your Dreams

AIRBLOCK DRONE



APP



HOVERCRAFT

SAM Lab



Multiplatformní stavebnice - dražší ale dobrá

Tello - programovatelný dron pro vnitřní polítání :)

- vlastní wifi
- tablet
- výdrž
- fotky a videa



2 890Kč

Teaching

Category

M Kits (10)
M Robotics (8)
M Sets (2)
3D Printer (17)
Training models (20)
Additions (7)

Subject

Addition (25)
Training model (20)
3D Printing (17)
Robotics (10)
Pneumatics (3)
Mechanics / Statics / Simple Machines (2)
Renewable energies (2)
Drives / Vehicles (1)
Electronics (1)
Optics / Light (1)
Physics (1)

✓ fischertechnik – the building blocks to an engaging STEM education program

Leading educators are stressing the importance of STEM Education (Science, Technology, Engineering and Mathematics). Therefore you need materials that allow educators and teachers to provide an engaging, hands-on introduction to technology and essential STEM related concepts. fischertechnik is the best choice!



STEM Kits (10)



STEM Robotics (8)



STEM Sets (2)



3D Printer (17)



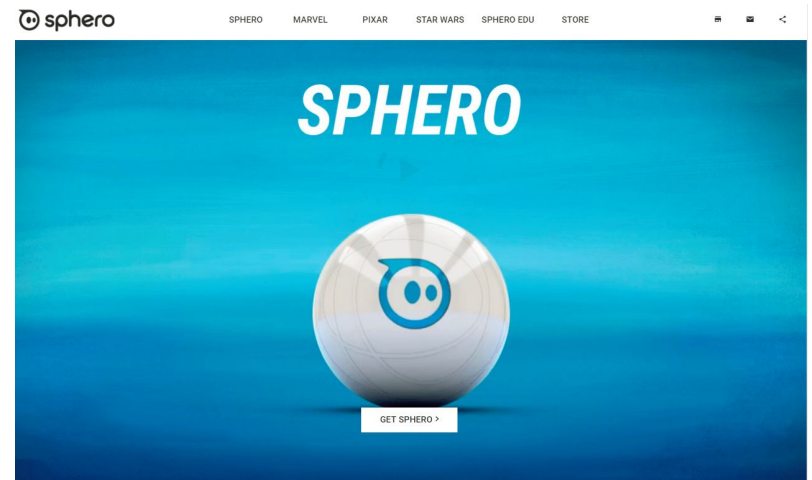
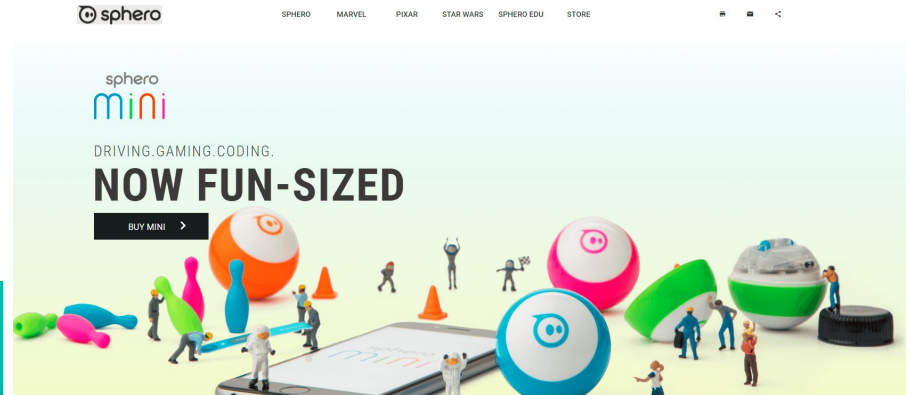
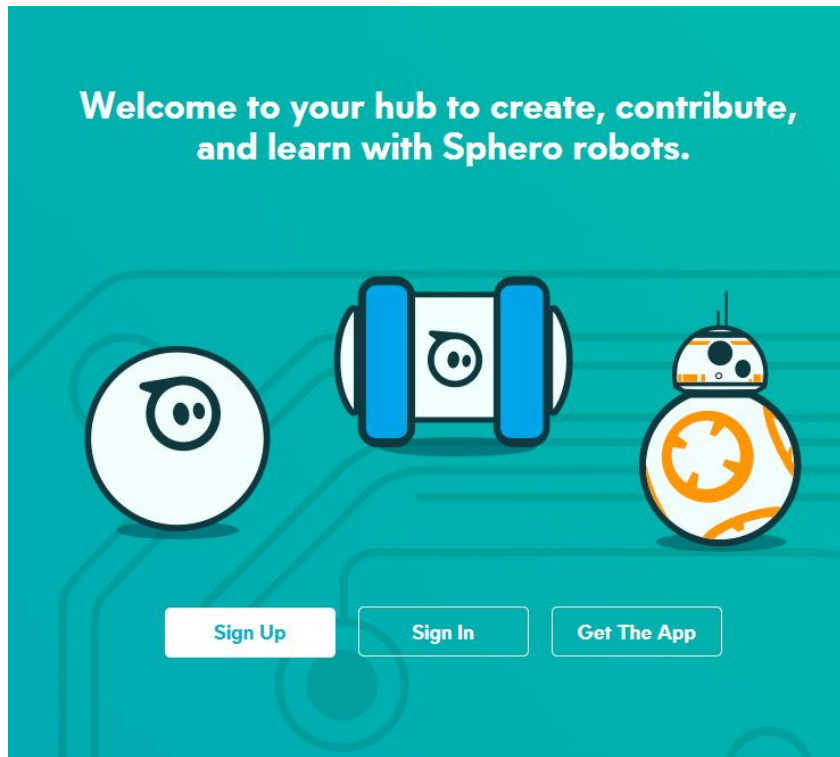
Training models (20)



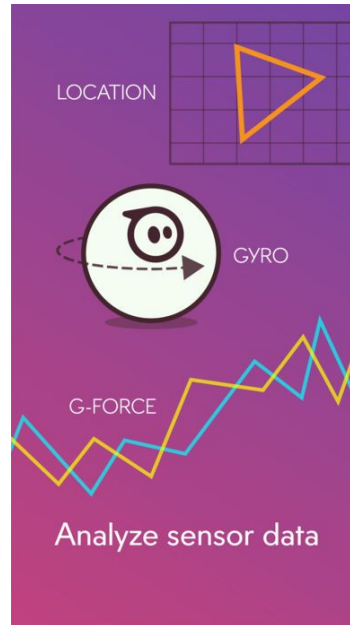
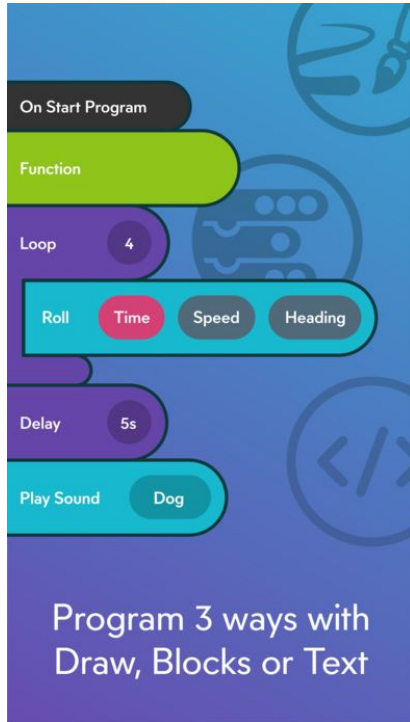
Additions (7)



<http://www.sphero.com/>



Sphero Edu - SPRK+





<https://ozobot.com/>

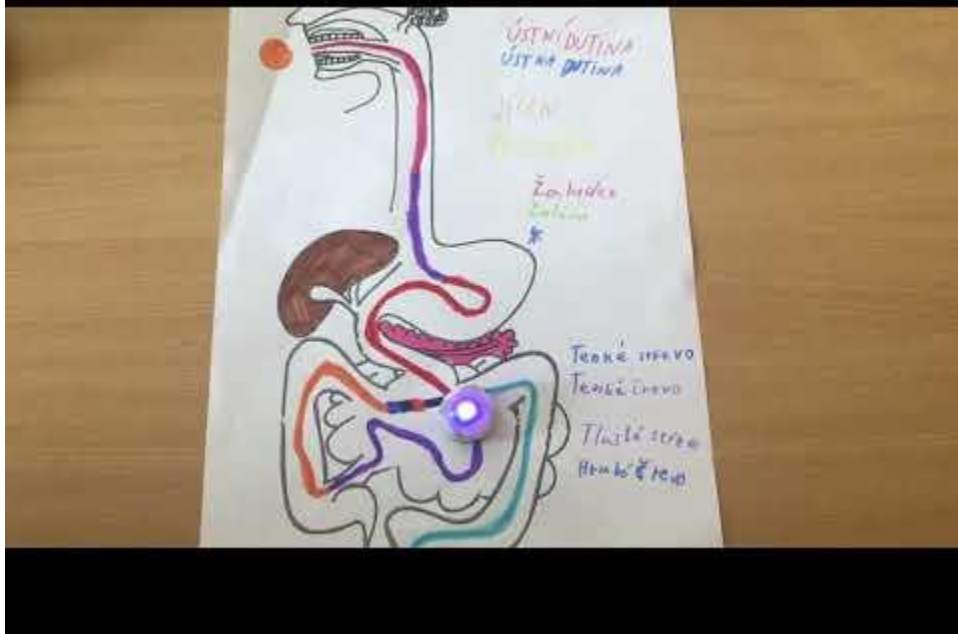
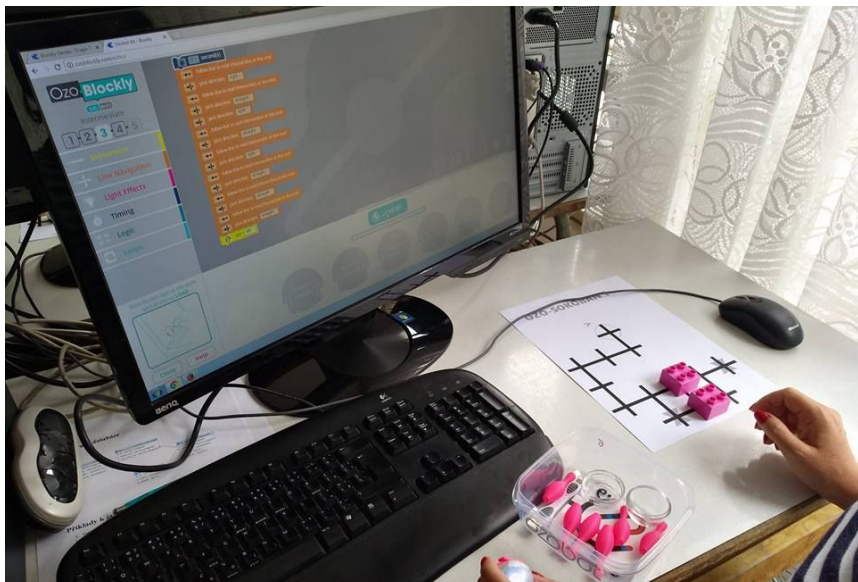
ozoboti.cz

mluví :(
bliká
Jezdí přímo po čáře
dá se ovládat aplikací smartphone
Jednoduché grafické programování
Komunikace s chytrým zařízením přes
Bluetooth nebo WiFi
vyhýbá se překážkám



OZOBOT EVO	cca 3600,- Kč
OZOBOT BIT2	cca 1600,- Kč

Hrajeme s i s ozoboty



ROBOTIS PLAY

Pro věk 5+



str. 3

ROBOTIS IDEAS

Pro věk 5+



str. 4

ROBOTIS DREAM

Pro věk 7+



str. 5

ROBOTIS SMART

Pro věk 9+



str. 6

ROBOTIS MINI

Pro věk 10+



str. 8

ROBOTIS STEM

Pro věk 12+



str. 10

www.MegaRobot.cz

ROBOTIS PREMIUM

Pro věk 15+



str. 11

ROBOTIS GP

Pro věk 15+



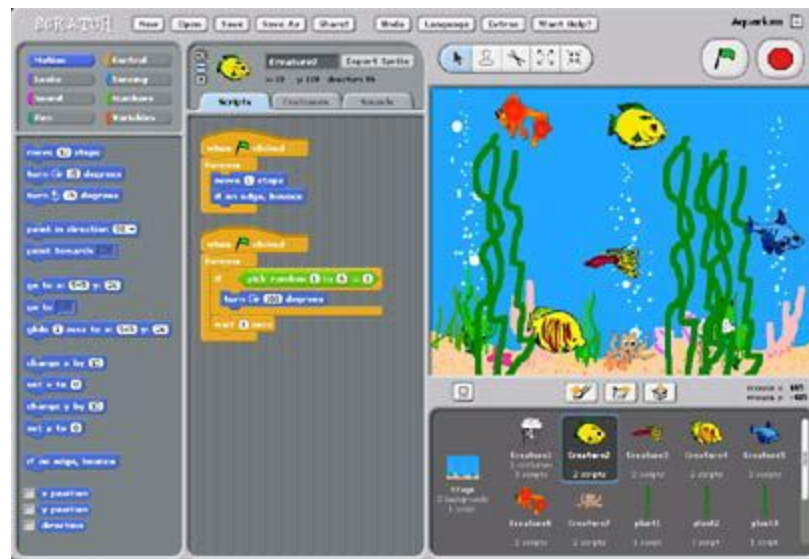
str. 11



3D brýle Cardboard 150,- Kč



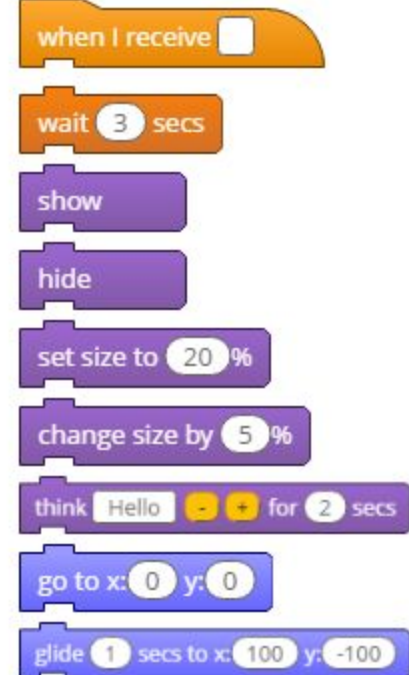
SCRATCH



Programování Scratch 0,- Kč Online

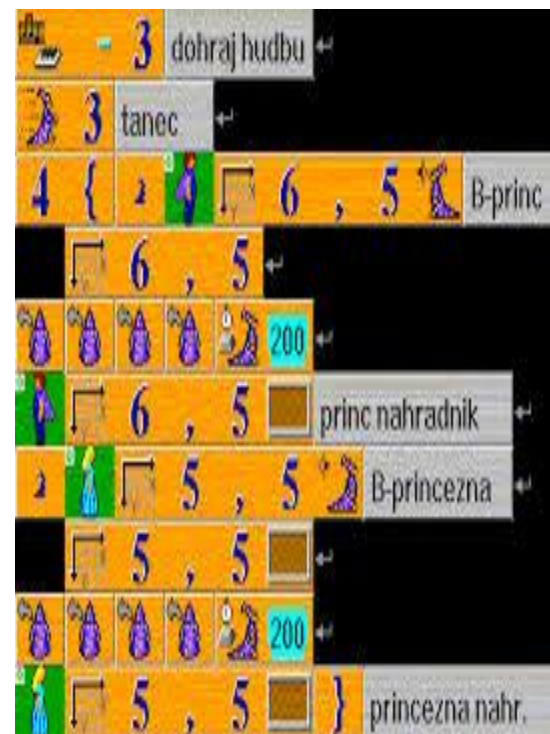


Code Blocks



Programování Tynker 0,- Kč Online

<https://www.tynker.com/school/>

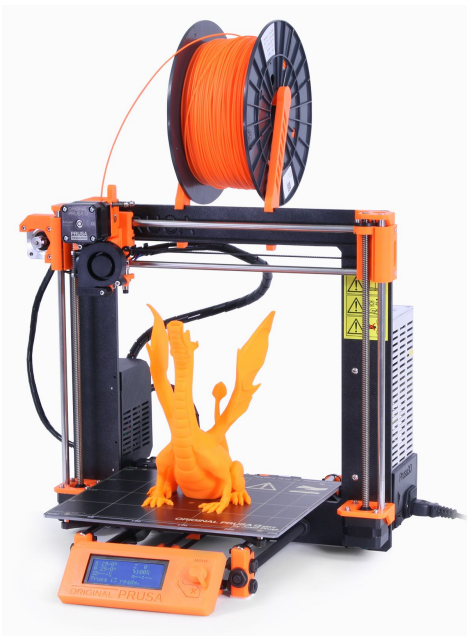


<https://www.sgpsys.com/cz/Order.asp>

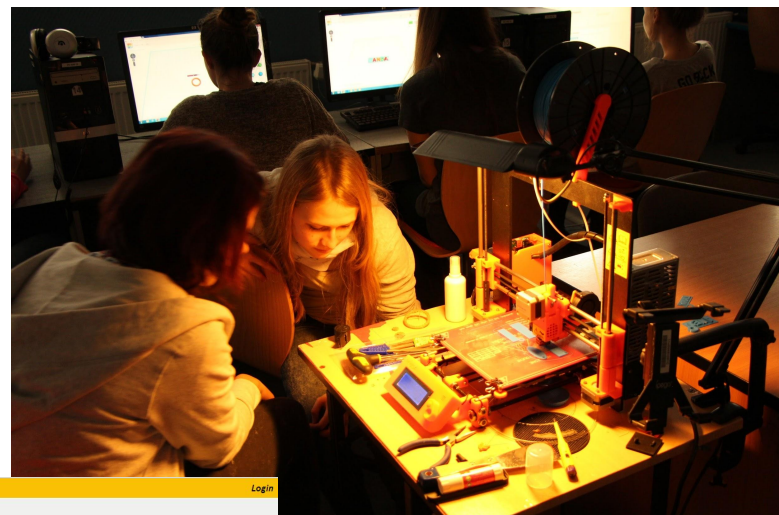
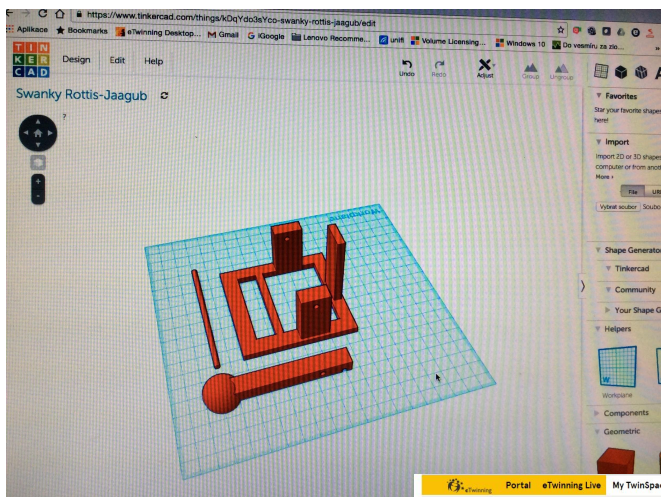
Baltík od 600 - 25 000Kč záleží na licenci

KODU - první stupeň





3D tiskárny - cca od 15 tis



Portal eTwinning Live My TwinSpaces Login

Home » Activity 1 - Results

Farther, higher, stronger in 3D

Design and model with ICT, print on 3D printers and assemble a medieval catapult. Any design is allowed, use the forces of elasticity, twisting or bending. Try out the assembled catapult, measure its basic physical characteristics and work on further improvements. Share your suggestions with project partners, comment and improve. Organize a competi...

Pages

Activity 1 - Build the catapult
Activity 1 - Results

Activity 1 - Results

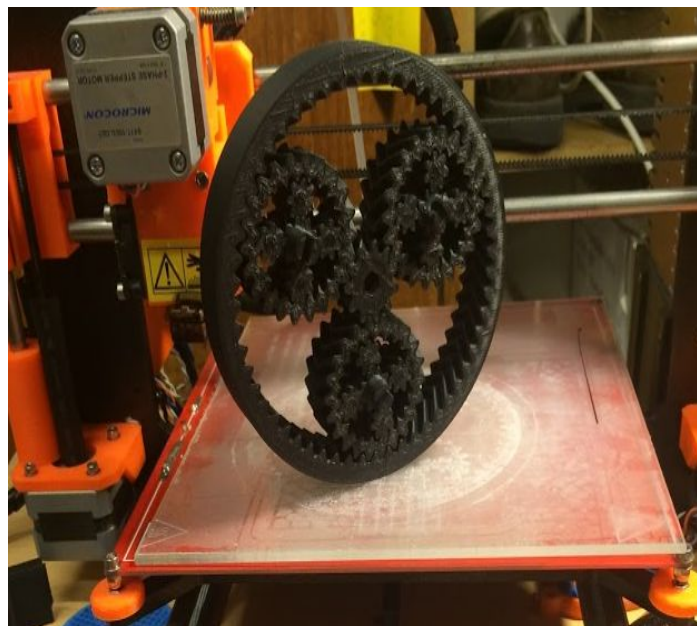
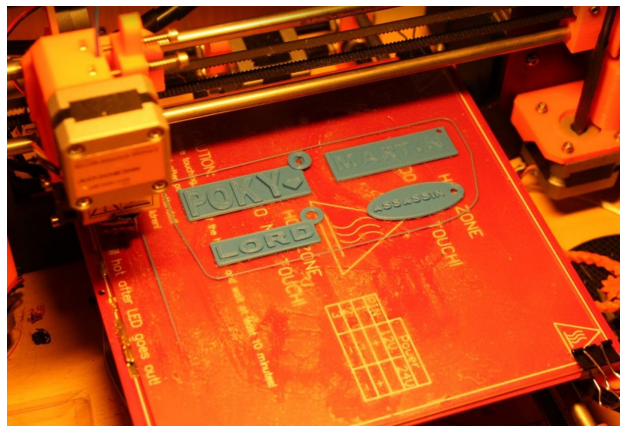
Nº	country	picture of catapult	team	force (N)	distance (elevation 0°)	distance (elevation 15°)	distance (elevation 30°)	distance (elevation 45°)
1	CZE		flisateam	0,5				
2	CZE		Fisa2					
3								

www.etwinning.net

3D tiskárna v mezinárodním etwinningovém projektu



Od žáků ze 4. tříd





ne moc “smart”, ale

Mechanická laboratoř



cca 800Kč

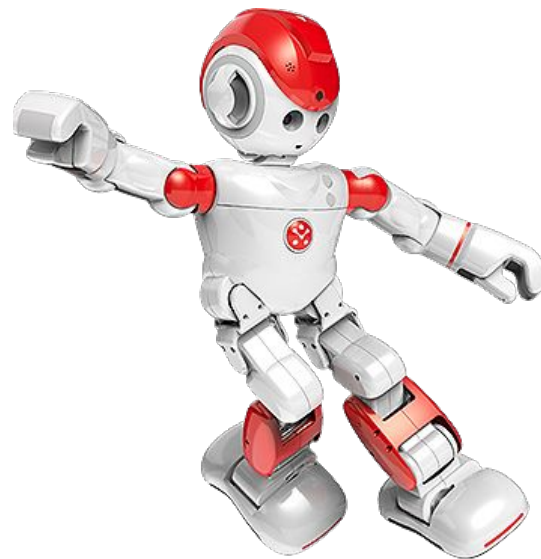
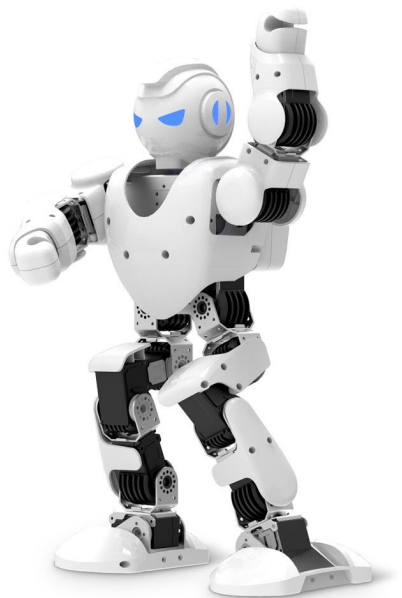
Itriangle !!



<https://portal.boxed.cz/page/itriangle>



Chtělo by to trochu pošefovat stranky :(



Programovatelní “humanoid” roboti cena: hodně

A co nejmenší ve školce?



Bee Bot cca 2400,- Kč

Blue-Bot - Bee-Bot



Galerie Galerie (1)

TTS Group BlueBot Třídní sada od 16490 Kč

TTS Group Blue Bot Beruška interaktivní robot pro děti od 2 499 Kč



Robotí panda - MTINY



[Pro první stupeň programování pomocí obrázků - 4151Kč](#)

Scottie go



Photon



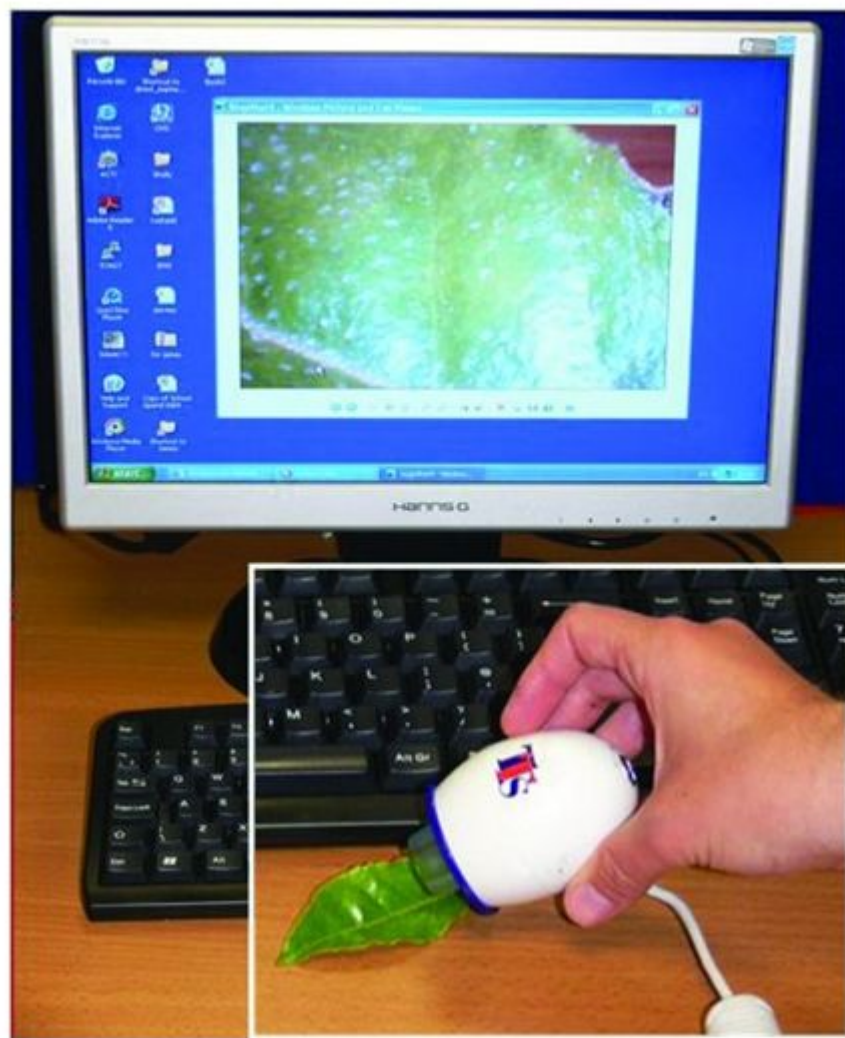
[Programování pomocí Scratch, ovládání BT 4699Kč](#)

Mluvicí skřipce cca 1800,-6ks



Hodí se na

- zapamatování básničky
- pokud děti něco vyrábí nebo postupně plní úkoly, tak na každém stanovišti může být instrukce
- nahraješ v jednoduchých větách pohádku a děti řadí dle časové posloupnosti



Digitální mikroskop
2000,-

“Co ted’ frčí”



BETT SHOW 2018 - Londýn

goo.gl/94wpFv

Zdroje:

<http://www.e-mole.cz/>
www.sandofky.cz

Výzkumná práce dvojice Fišer + Heteš

Zoo Hanky Šandové



Pojďte si hrát s OZOBOTY práce pro nadšence ve věku od 4 do 99let

mapy, hraní si s ozokódy

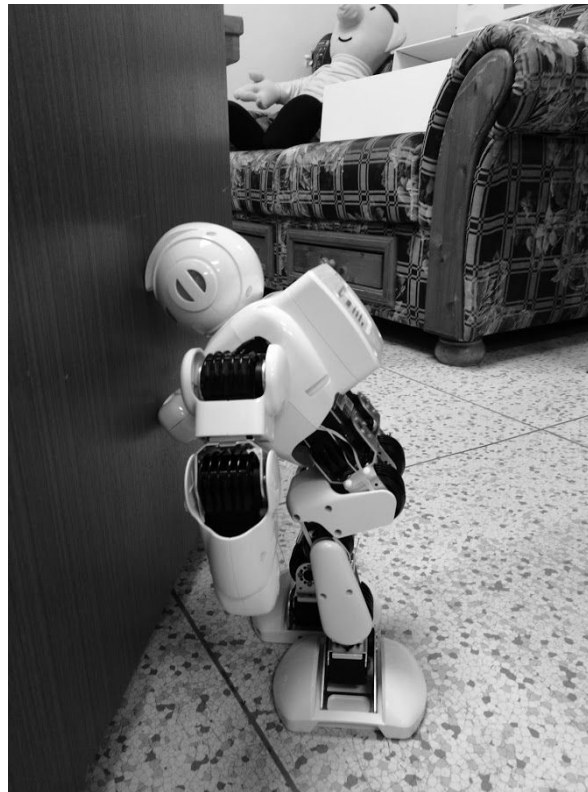
WWW.OZOBLOCKLY.COM

Programování, využití tabletu

spousta tvořivého hraní a srandy :)

OZOBOT BIT2 - www.ozoboti.cz

Někdy má i robot své dny....



Děkujeme za pozornost



Vašek Fišer
fiser@zskomtu.cz

Zdeněk Heteš
hetes@zsmltu.cz

www.offlineday.eu