

# Science labs & mini-fablabs in schools

## Personal & Digital Fabrication in education



# Frits Hoff

Founder & director FabLab Maastricht

Boardmember foundation FabLab Benelux

Past:

Director foundation OpenWijs.nl, open education

Senior Projectmanager, Open University NL

Senior Projectmanager at Expertisecentre ICT

Manager Academic Services at European Association of Distance

Teaching Universities (EADTU)

Teacher physics, IT & biology

# Evolution of FabLabs

2005: Neil Gershenfeld, MIT, workshop How to make almost anything  
/ book FAB

2010: 30 FabLabs worldwide

2013: 250? FabLabs worldwide

## Fablabs globally



# Competitors



# Schools visiting FabLabs





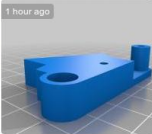
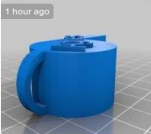
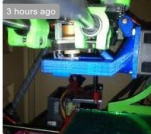


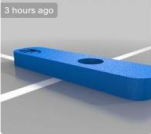


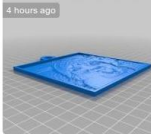

# Workshops at schools

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## MakerBot Customizer

Customizer is a simple way to make customized 3D Things that you can share, download and print!




**Announcing Winners of the MakerBot Customizer Challenge!**  
Congratulations to TheNewHobbyist, Wizard23, and Benjamin on their winning entries!

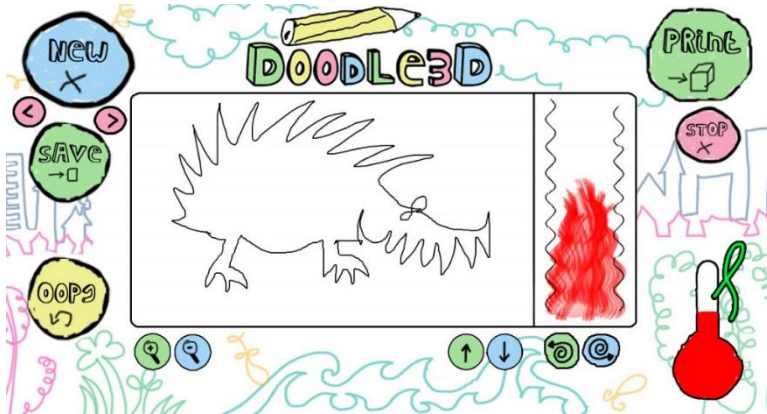
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Get started with these examples! [see more](#)

 <p>Customizable Lithopane by MakerBot</p>	 <p>for the birds by Benjamin</p>	 <p>Parametric Music Box by wizard23</p>
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Recently Customized

-  Parametric Pulley by jlp6k
-  Toy train track by edabot
-  Calibration -flat- square by Yochtar



Doodle3D

NEW X

SAVE -□

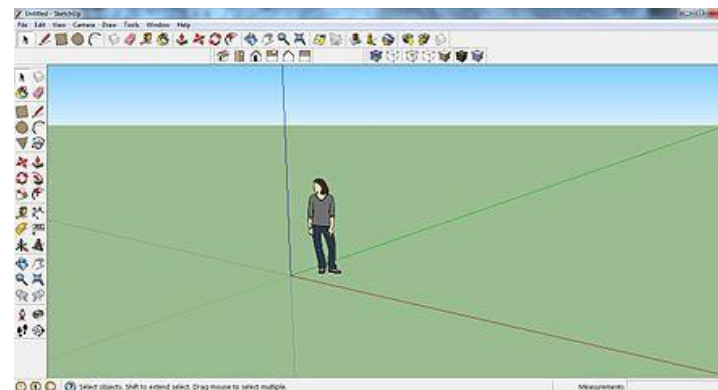
OOOPS ↻

PRINT →

STOP X

↑ ↓ ↻ @

A hand-drawn interface for a 3D modeling application. It features a central drawing area with a simple line drawing of a creature. Surrounding the drawing area are various interactive buttons and icons: 'NEW X', 'SAVE -□', 'OOOPS ↻', 'PRINT →', 'STOP X', and navigation/undo icons (↑, ↓, ↻, @). The interface is decorated with colorful, hand-drawn doodles like flowers and a red balloon.



# Workshops at schools



# Benefits

Learn to download, draw 2D and 3D, scan 3D

Learn to produce: print 3D, lasercutting, vinylcutting, 3D milling etc

Learn to program software

Learn to share knowledge and collaborate

Learn to publish designs and to earn money



# Benefits

History class: historic artifacts

Geography class: printing / lasercutted maps

Cooking class: printing food / molds for ices etc

Chemistry class: print molecules

Biology class: printing organs to study

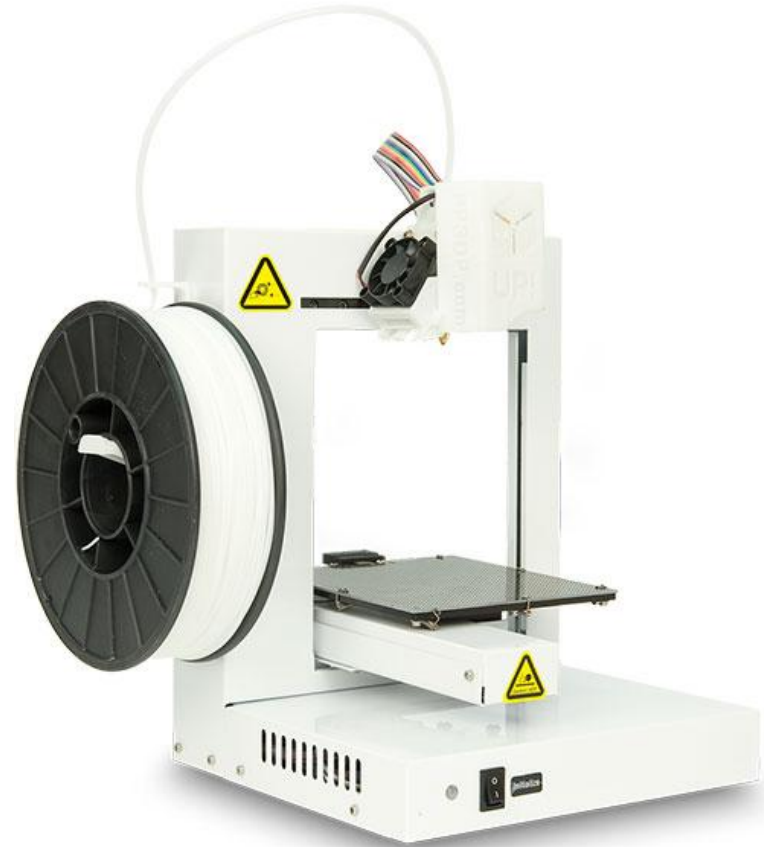
# Professions of the near future

- 3D printing architect
- Augmented reality engineer
- Traffic engineer
- Robot engineer
- Smart energy expert
- Cross-data analyst
- Knowledge Manager
- Life cycle technologist

# Schools buying 3D-printers for science & IT



# Plug & Play 3D-printers for culture class etc.



# Science labs & mini FabLabs

Complete equipment

Pupils training pupils and teachers

Part of normal curriculum

Research for curriculum topics

Research for SME's

Produce prototypes for SME's

# New role of FabLabs

Not anymore / less: raise awareness / train children

Still: support innovation, train people 20+

More: central knowledge institute, supporting science labs, more complex research in collaboration with universities / polytechnics

Needed: professional training of employees / funding of central government / share knowledge