Prototyping is a technique for building a quick and rough version of a desired system or parts of that system. The prototype illustrates the system to users and designers. It serves as a communications model for allowing persons who require the system to review the proposed user interaction with the system.

Although it might look like it, it is not easy to do some of these kinds of prototyping, e.g. sketching and 3d modelling! It does take time to master some of these skills but the time you put in will be reflected in your end product, just like with any other type of work!
You do not have any materials to prototype at home?
Think again: Let’s start with some paper!

Origami for Designers: The aim of the book is to establish folding as a primary design tool and, by doing so, to reintroduce it as an essential topic in design education and design practice.[1]

Get some paper prototyping inspiration from Theo Jansen’s Strandbeest using a motor and a lot of paper.[2]

Try to communicate your concept through 3D modelling – Rendering instead of 3D printing!

Fusion 360/SketchUp/Solidworks
One way to create high-fidelity prototypes in-door is through 3D modelling! You can create pieces and put them together, animate movement of pieces and render the finished product. Eventually you can even 3d-print your prototypes, through commercial services or when Innovation Space opens again.

Check out the videos from the master of cardboard modelling, Joep Frens: https://vimeo.com/user11618719
[1] https://www.academia.edu/35012028/Paul_Jackson-_Folding_techniques_for_designers_from_sheet_to_form
Let’s talk about sketching! Let’s talk about you and your pencil!

Sketching is a very quick but effective way to communicate designs and to prototype them! It takes a lot of practice to create professional sketches, however the threshold to get started is very low, here are some examples of what can be done.

Check out these tutorial videos for sketching! They start with basic things like, how to hold your pencil right! So do not be afraid!

Some tips for when you ran out of time:
• Sketch on big paper and then smaller drawings --> makes it look better.
• Trace simple drawings & shapes to a good start (especially proportions).
• Mock ups can also be used for user testing interactions.

Mock-up apps for the win!

This can be as easy as making a powerpoint presentation! You can pretend that each slide is going through the app and then use this to e.g. make a video demonstrator!

Adobe XD
Proto IO
Mock Flow
Invision
and many more …!

https://www.invisionapp.com/
https://www.mockflow.com/
https://proto.io/

There are some easy exercises you can do to quickly boost your sketching skills!

Beginner sketching exercises:
[4] https://www.youtube.com/watch?v=IM_zvACz2og&t=554s

https://www.invisionapp.com/
https://www.mockflow.com/
https://proto.io/
How can you improve your Arduino skills?
Come closer and take a look

Arduino is a great way to prototype your electronics!
Even if you don’t have access to one, you can use an Arduino simulator!
Even if you do have an arduino this could be a great way to have an easier
time troubleshooting, or make digital prototypes with components you
don’t readily have available.

The arduino simulator you’ve been looking for!

Brainstorming is better together?!
Here are some online brainstorm tools:

Create shared whiteboards
https://www.webwhiteboard.com/

Work together on brainstorm boards (free):
https://miro.com/innovation-software/

Are you in need of pre made brainstorm templates?
Then try Mural!
https://mural.co/

Some friendly advice (privacy rights related):
• Mural is from the US
• Miro is European

[5] https://www.youtube.com/watch?v=6uz1sCA9jo6

Need some inspiration to start?
Then welcome to the inspo section!

You want to build a great prototype but you cannot leave your home?
Then gather all the junk in your home and let’s build!!!

This is the YouTube channel of the master of crafts, Adam Savage. Get crazy with one of the co-hosts of MythBusters and Unchained Reaction. [7]

Let’s be like Ingo Maurer, who builds lamps out of broken plates. We shall all be a bit more venturesome! This is a video about Ingo talking about his inspiration [8]

Let’s be like Ingo Maurer, who builds lamps out of broken plates. We shall all be a bit more venturesome! This is a video about Ingo talking about his inspiration [8]

You want more??
Rube Goldberg Machines are overly complicated machine built with everything your household can offer! Make your life overly complicated! [9] [10] [11]

Theo Jansen is an artist who is building large mechanisms out of PVC that are able to move on their own. [12] [13]

Good to know!
Nourishing the design ability through food [14]

Need inspiration or guidelines on how to make ANYTHING? [16]

Find some 3D print files!! [17]

[1] https://www.youtube.com/watch?v=ZfvtGrhYk0I
[3] https://www.youtube.com/watch?v=ZfvtGrhYk0I
[5] https://www.youtube.com/watch?v=iemItSAT9Ew
[8] https://www.youtube.com/watch?v=LevVEF2B_pM
You need some additional material?
Get your baking powder and salt!

You are in need of some clay-like material. The salt dough recipe is perfect for you. Check the website — it is a bit pricey.

Heres another video of making clay yourself!
https://www.youtube.com/watch?v=FvTFukuK8cY

Heat it, mold it and use it. Check the website — it is a bit pricey.

https://www.protoplast.nl/

You have some tips and tricks of your own?
Share them with us please!

innovationspace@tue.nl

Thank you!!
References:

[e] own work.
[f] own work.
[s] FatherlyHQ, (n.d.). Because just “eating the toast” is sooooo boring. [Pinterest post]. Retrieved March 18, 2020, from https://pin.it/6ICnlhm