



TEACHER'S USER MANUAL:

**SEARCHING FOR 3D PRINT
ASSISTIVE TECHNOLOGY
DEVICES**

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INTRODUCTION

Educational technology occupies a leading place in the teaching-learning process. However, the absence of tools adapted for people with disabilities can be an obstacle in the use of technological resources, generating inequality and little autonomy. To cover these inequalities, assistive technology devices can guarantee access to them.

Of course, the instructor in the teaching-learning process is generally not trained to design assistive technology devices. Fortunately, a lot of designs are already available on the world wide web. Furthermore, some of these designs can be adapted and personalized. However, finding such devices and designs is not always a straightforward task.

This manual is created for the teacher to learn how to find appropriate 3D model designs of assistive technology devices that can be 3D printed and assembled.

In the last two decades, the 3D printing technology has developed rapidly. Reliable 3D printers are now available with a rather economic price tag. Additionally, the knowledge that is required for its proper and safe handling is increasingly available to anyone. This technology, apparently more typical of engineering, is being transferred to the educational field in order to provide technical solutions to students, among others, those with special educational needs.

This manual will explain the most important basic tools and steps that allow a teacher to find appropriate designs for assistive technology. It starts off with the explanation of special search engines for 3D models. Next, it gives a list of model repositories and marketplaces where designs can be found. Last, it introduces one of the most popular repositories and explains several ways of searching through that specific model database.

SEARCH ENGINES

On the internet, there are a lot of Repositories, Marketplaces, and Communities available to download 3D models for 3D printing. These offer all sorts of 3D models, not only for Assistive Technology, but also for a lot of other purposes, such as Art, Fashion, Household, Hobby, Gadgets, etc.

To find a specific 3D model in this jungle of models in a manual fashion would be a lot of work, and rather undoable. Luckily, some specific search engines are available that search these 3D printing websites, model repositories, and marketplaces to find exactly what you are looking for. A 3D print search engine is similar to the Google, DuckDuckGo, Ecosia, Yahoo!, or Bing websites, but now just for printable 3D models. They allow you to search and browse through all of the relevant repositories. A list of the most-used 3D model search engines with the biggest data-bases is given in the Table below.

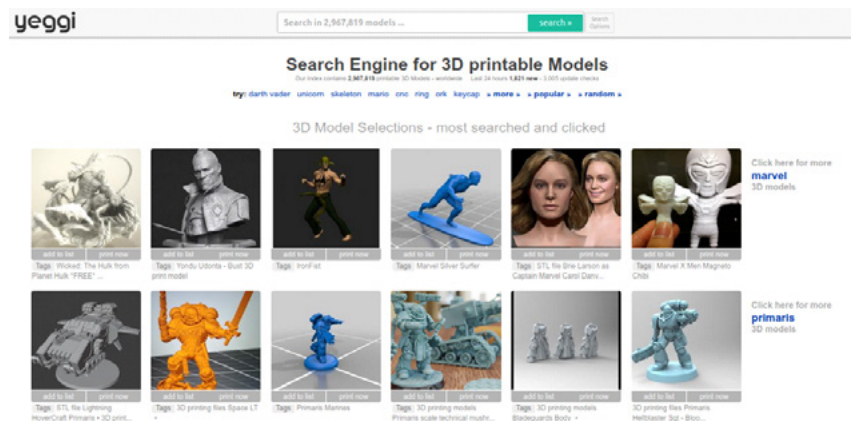
TABLE 1: SEARCH ENGINES FOR 3D PRINT MODELS

SEARCH ENGINE	WEBPAGE LINK
Yeggi	https://www.yeggi.com/
STLfinder	https://www.stlfinder.com/

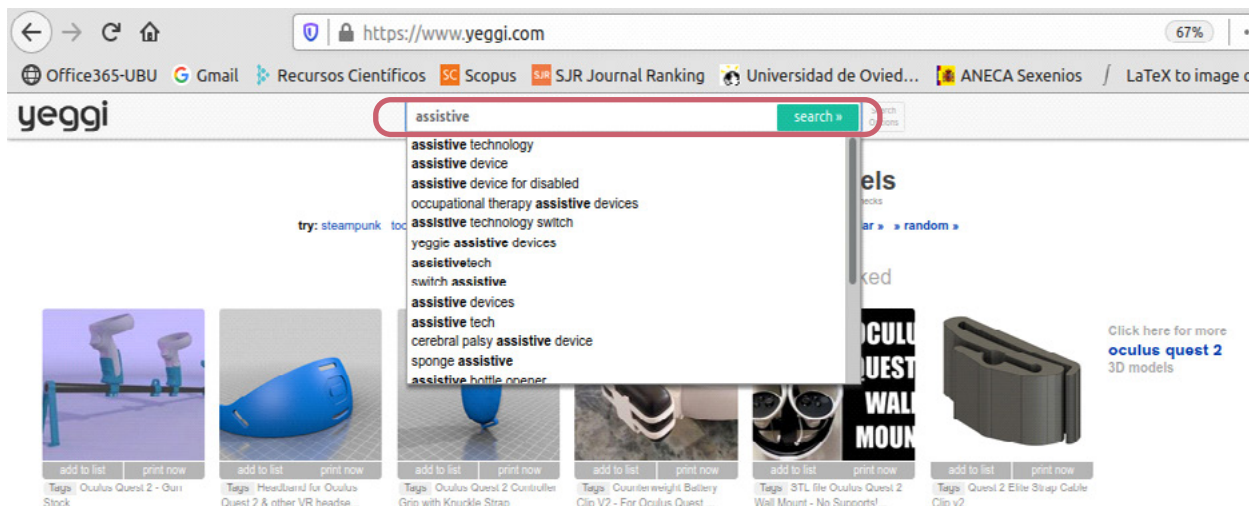
YEGGI

Yeggi is the most popular and well-known 3D print model search engine, with the biggest database.

It searches several of the biggest and most popular repositories, such as Thingiverse, NIH 3D Print Exchange, MyMiniFactory, Cults, PrusaPrinters, pinshape, etc. (see also the next section of this manual).



You can search by entering keywords, which is guided by making use of previous search lists. Below you can see an example searching with the word “assistive”:



You can also search by clicking on the popular keywords, which can be found below the search field:



To narrow down the search results, you may filter by free or commercial models and sort by popularity, best match or latest (most recently updated files):



Search Engine for 3D printable Models
Your Search for "assistive technology" - 2,377 printable 3D Models

Just click on the icons, download the file(s) and print them on your 3D printer
try: heart ganshin impact godzilla face mask minecraft hatman baby groot » more » popular » random »



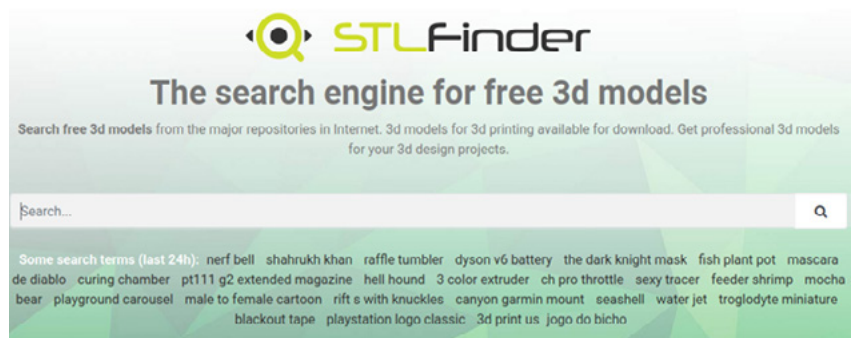
Search Engine for 3D printable Models
Your Search for "assistive technology" - 2,523 printable 3D Models - for free - latest

Just click on the icons, download the file(s) and print them on your 3D printer
try: tau bmw imperial knight 28mm star wars legion free stl file free gcode file » more » popular » random »



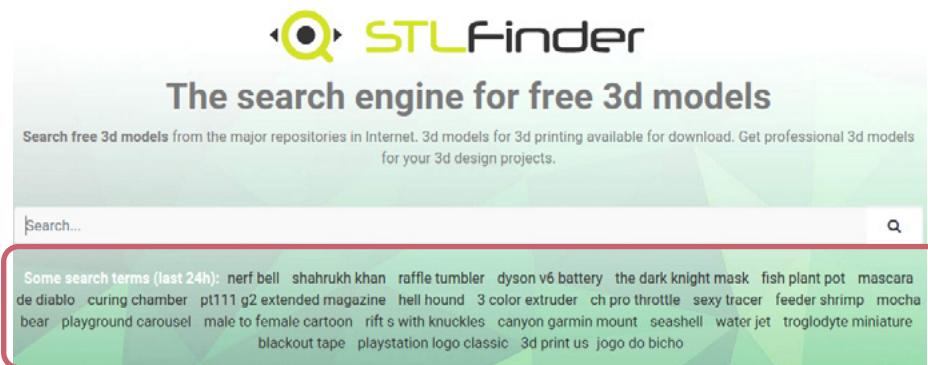
STL FINDER

STLfinder is another well-known 3D print model search engine, also with a huge database. It searches among the major repositories on the internet.

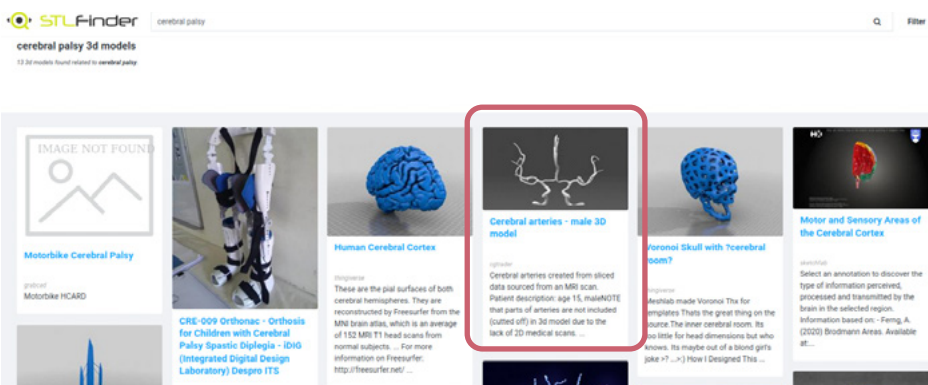


If you search by keywords, it is also guided with a suggestion list. However, this list is restricted to 5 terms only.

You can also use some of the search terms that were used in the last 24 hours, which is available right under the search bar:



Once a search term is entered, a list of 3D models becomes available. A picture, the title, the repository name, and a short description of every item in the list can be seen. By clicking on the item, a link to download the model from the repository becomes available.



The most extensive results will become available if you search for English-language keywords. However, other-language keywords (i.e. Spanish, French, Italian, Portuguese, Dutch, German) can also give good results.

A set of keywords (or a combination of these) that can help to find appropriate assistive technology devices is given in the next Table:

SEARCH KEYWORD
assistive technology
assistive device
assistive switch
disability
disabled
handicap
cerebral palsy
joystick
keyboard joystick
push button
occupational therapy
adhd

REPOSITORIES

If your idea is to search or browse through a single repository or marketplace for 3D models, a good list is available on All3DP (<https://all3dp.com/>). This website announces itself as “the World's #1 3D Printing Magazine for Beginners and Professionals”. The link for finding the repository list is:

<https://all3dp.com/1/free-stl-files-3d-printer-models-3d-print-files-stl-download/>

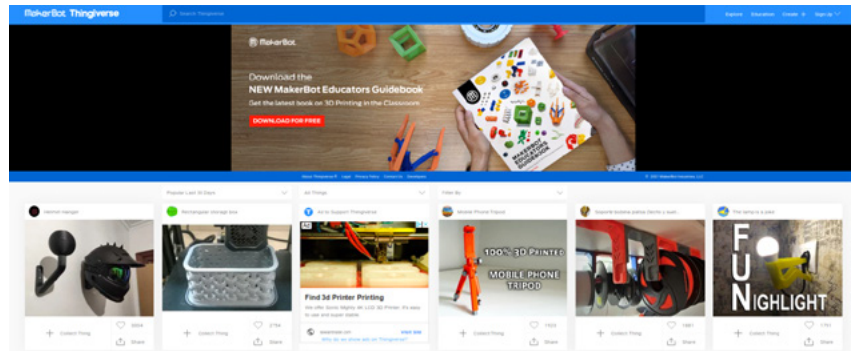
An overview of a selection of 3D printing websites, model repositories, and marketplaces that offer free 3D printer models to download, is given in the next Table.

SEARCH ENGINE	WEBPAGE LINK	TYPE	FREE/PAID
Thingiverse	https://www.thingiverse.com/	Repository	Free
Cults	https://cults3d.com/	Marketplace	Free, Paid
CGTrader	https://www.cgtrader.com/	Marketplace	Free, Paid
MyMiniFactory	https://www.myminifactory.com/	Marketplace	Free, Paid
Pinshape	https://pinshape.com/	Marketplace	Free, Paid
TurboSquid	https://www.turbosquid.com/Search/3D-Models/free/stl	Repository	Free, Paid
Prusa Printers	https://www.prusaprinters.org/	Repository	Free
3DExport	https://3dexport.com/	Marketplace	Free, Paid
YouMagine	https://www.youmagine.com/	Repository	Free
NIH 3D Print Exchange	https://3dprint.nih.gov/	Repository	Free
Threeding	https://www.threeding.com/	Marketplace	Free, Paid
Free 3D	https://free3d.com/	Repository	Free, Paid
GrabCAD Library	https://grabcad.com/	Repository	Free

SEARCH ENGINE	WEBPAGE LINK	TYPE	FREE/PAID
Redpah	https://www.redpah.com/	Marketplace	Free, Paid
3DShook	http://www.3dshook.com/	Subscription Service	Free, Paid
XYZprinting 3D Gallery	https://3d-gallery.xyzprinting.com/	Marketplace	Free, Paid
Zortrax Library	http://library.zortrax.com/	Repository	Free, Paid
Libre3D	http://libre3d.com/	Repository	Free
Fab365	https://fab365.net/	Marketplace	Free, Paid
NASA	https://nasa3d.arc.nasa.gov/models/printable	Repository	Free
Dremel Lesson Plans	https://digilab.dremel.com/resources/lesson-plans	Repository	Free
Instructables	https://www.instructables.com/	Repository	Free

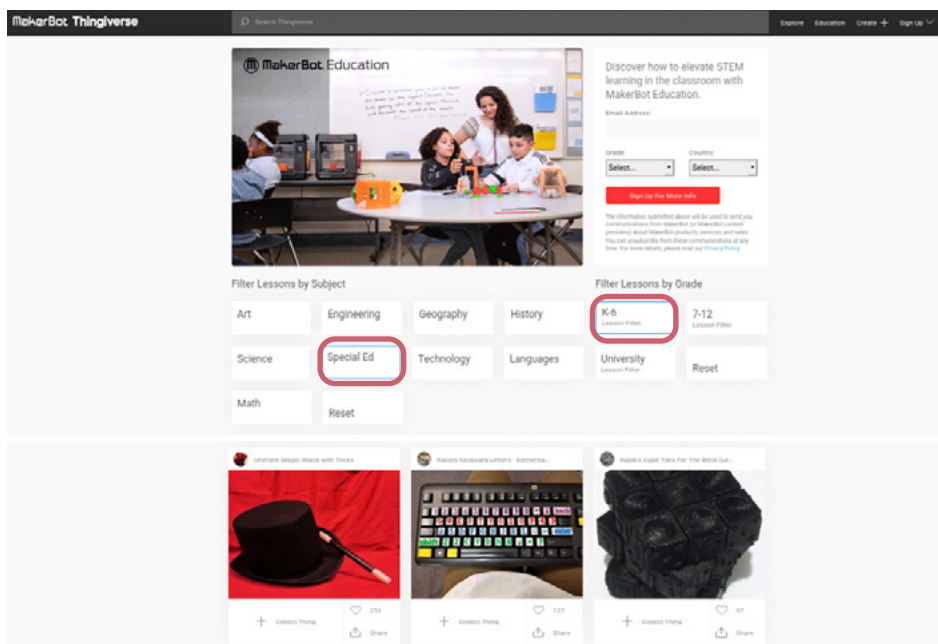
THINGIVERSE

Since Thingiverse (<https://www.thingiverse.com/>) is one of the biggest and most popular repositories, some explanation of this particular repository is given here, including different ways of searching through its tremendously large database. Thingiverse offers more than two million 3D model files (mostly in STL format). It is operated by MakerBot Industries, a producer of 3D printers.



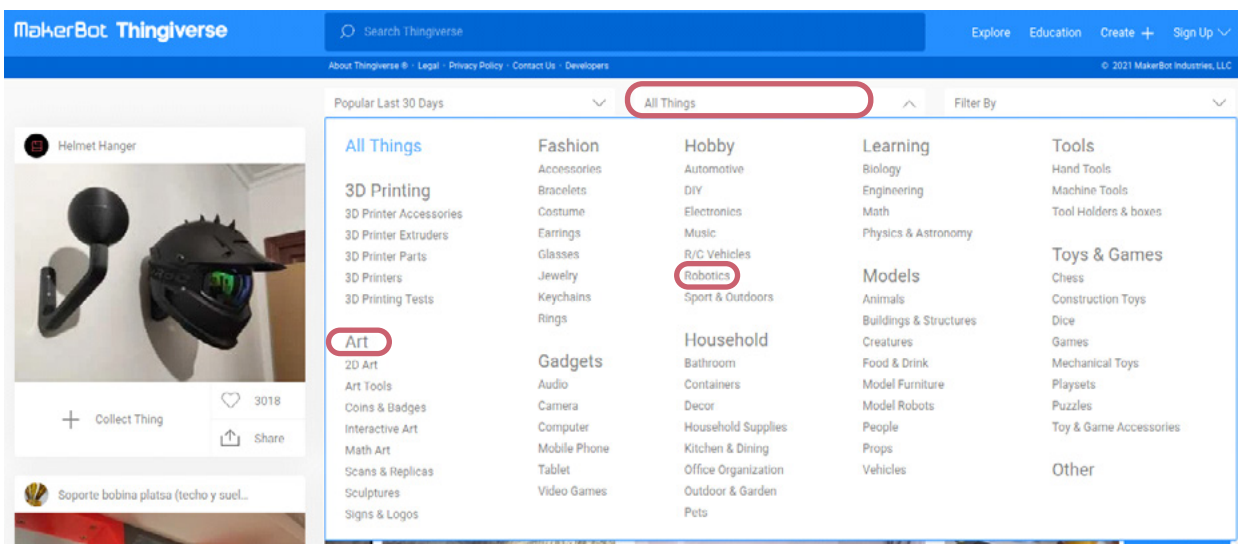
1. Education community search

To search in the Thingiverse Education community, you can click on **Education** in the upper banner on the right. Next, you can filter by Subject and Grade. In the example below, **Special Ed** and **K-6** (from Kindergarten to 6-year) are chosen.



2. “All Things” search

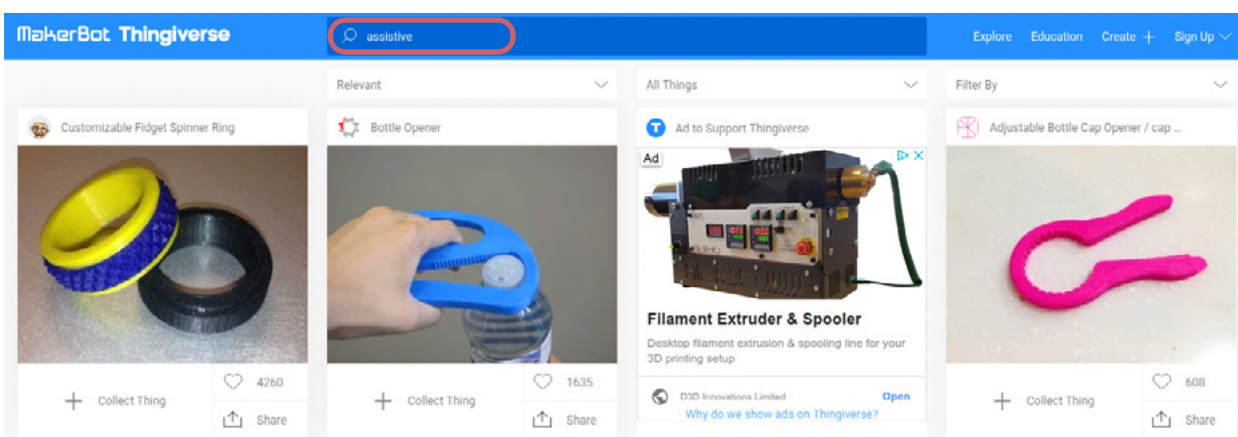
You can also perform a certain keyword group search. For that, you click on **All Things** in the second search banner. Now you can choose from a wide variety of keyword groups and subgroups, e.g. **Art**, **Fashion**, **Gadgets/Computer**, **Hobby/Robotics**, etc.



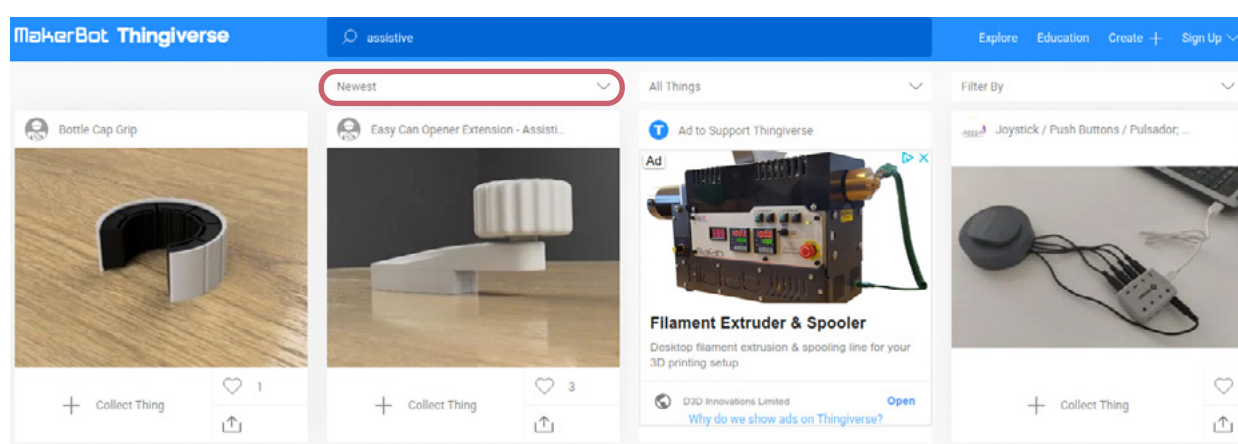
With a further filter, you can select between “Popular Last 7 Days”, “Popular Last 30 Days”, “Popular This Year”, “Popular All Time”, “Newest”, and “Most Makes”.

3. Keyword search

This is probably the most-used way for searching. You just enter any search word that you want. Unfortunately, this search is not guided by a suggested search lists. Below you can see an example searching with the word “assistive”:



Initially, the results shown are always filtered using “Relevant”. However, you can choose to filter between “Popular”, “Relevant”, “Exact Text”, “Newest”, and “Most Makes”. Below the example where “Newest” is chosen as filter:



The most extensive results will become available if you search for English-language keywords. However, other-language keywords (i.e. Spanish, French, Italian, Portuguese, Dutch, German) also give good results. The most extensive results will become available if you search for English-language keywords. However, other-language keywords (i.e. Spanish, French, Italian, Portuguese, Dutch, German) also give good results.

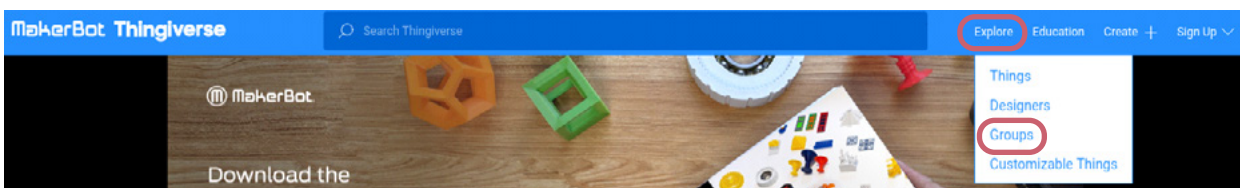
A set of keywords (or a combination of these) that can help to find appropriate assistive technology devices is given in the next Table:

SEARCH KEYWORD
assistive technology
assistive device
assistive switch
disability
disabled
handicap

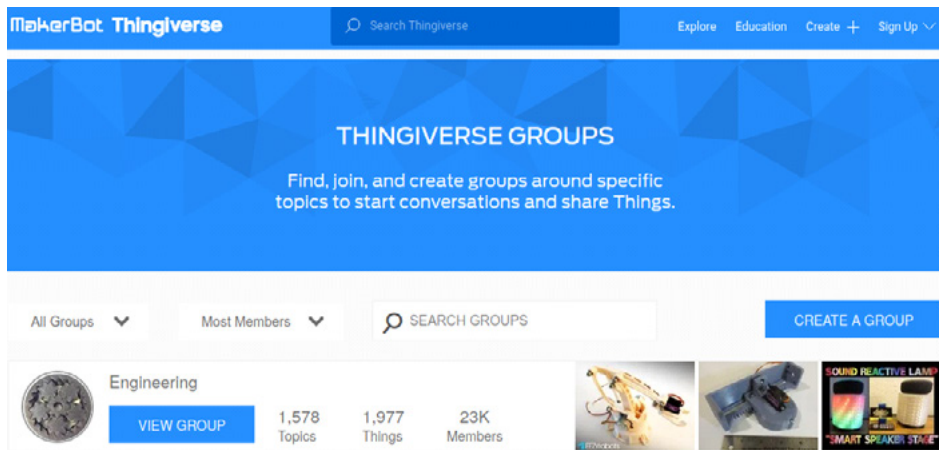
SEARCH KEYWORD
cerebral palsy
joystick
keyboard joystick
push button
occupational therapy
adhd

4. Explore Group search

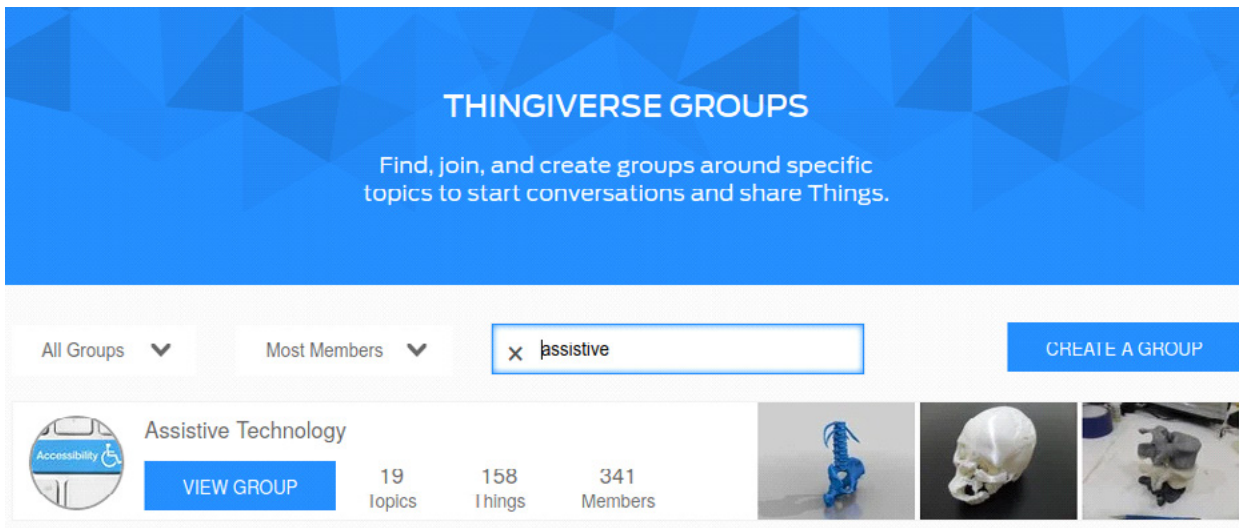
Another interesting way of searching, is by performing an Explore Group search. In that way, you can search for items within a certain group of related designs and designers. You can find the Explore Group search in the upper banner, by clicking on **Explore**. A menu rolls out, where you can click on **Groups**, as indicated in the figure below.



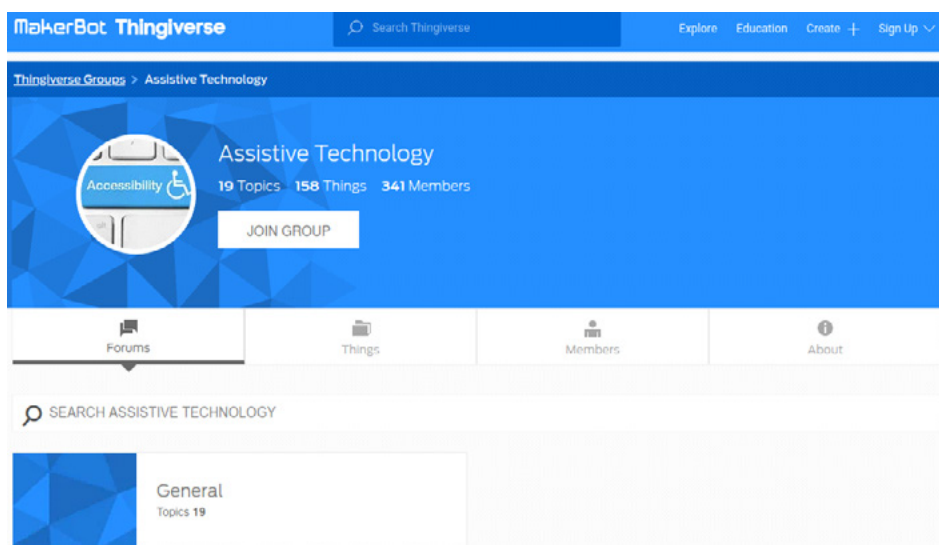
The Thingiverse Group Search page will then become available:



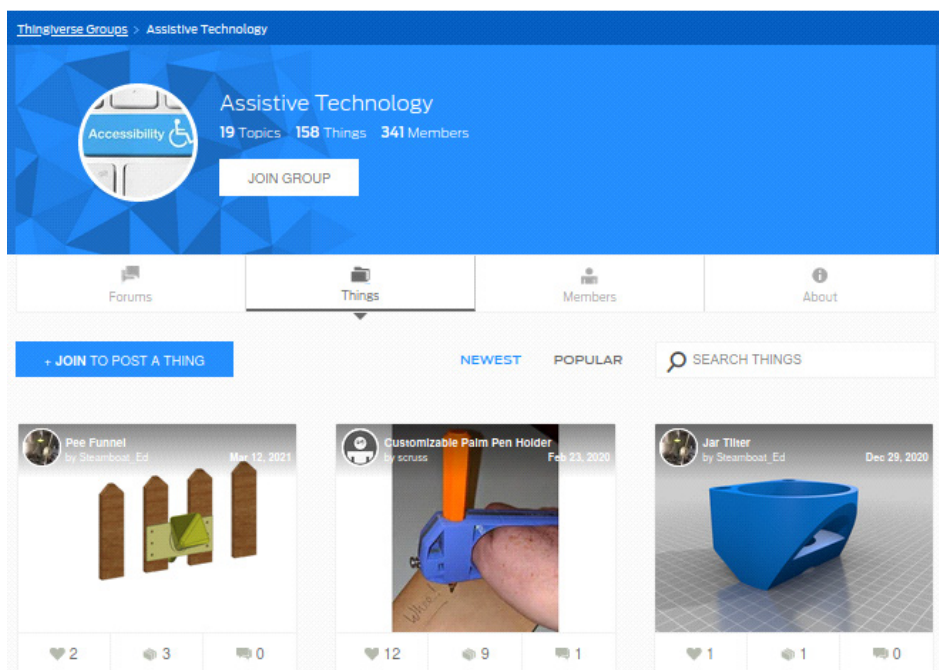
Here, you can now search again with a keyword. In the example below, the word “assistive” is used again:



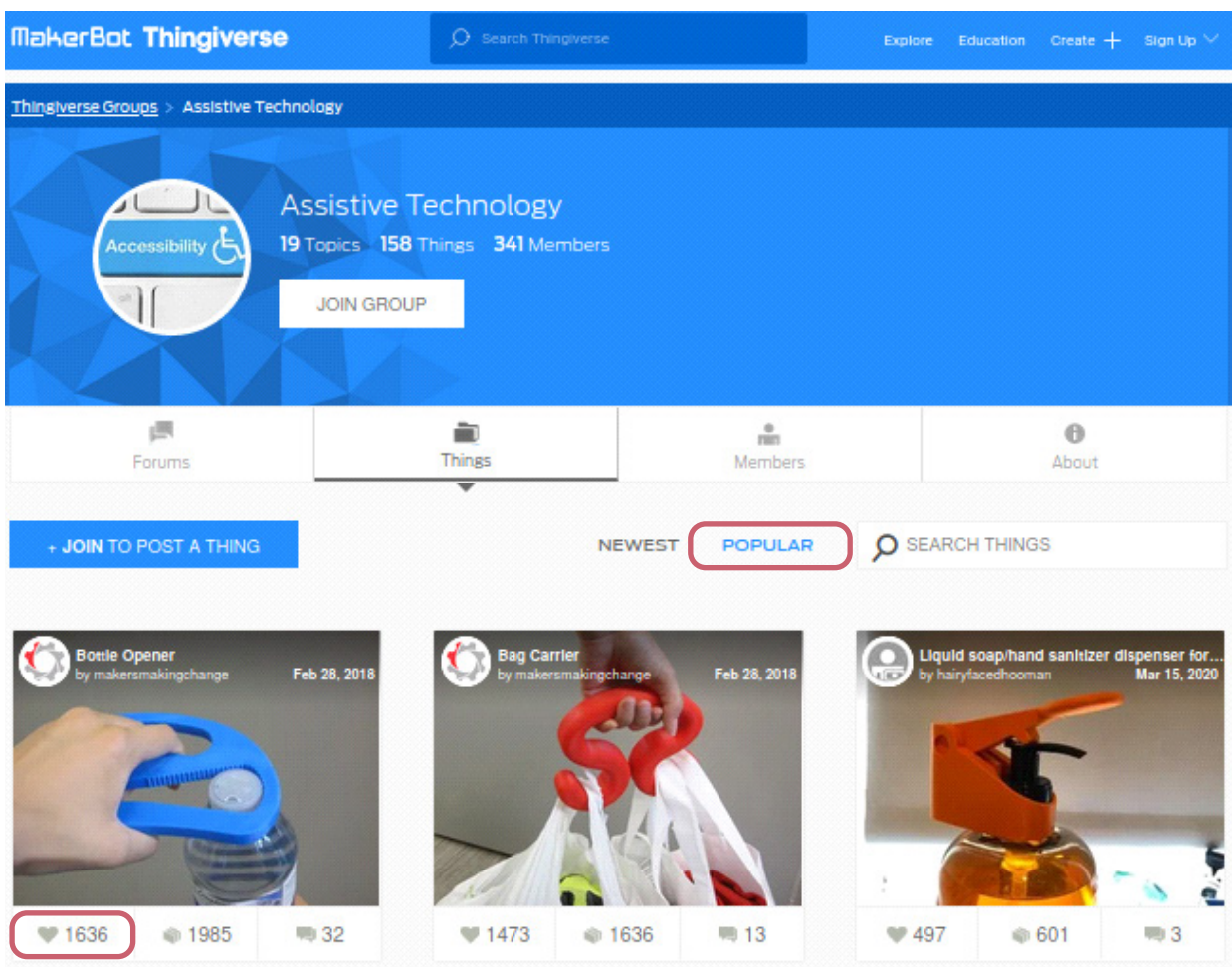
If you click on **VIEW GROUP**, the main group page becomes visible, always starting with the “Forum” Tab. If you are logged in (you need to have made an account for that), you can join the group by clicking **JOIN GROUP**.



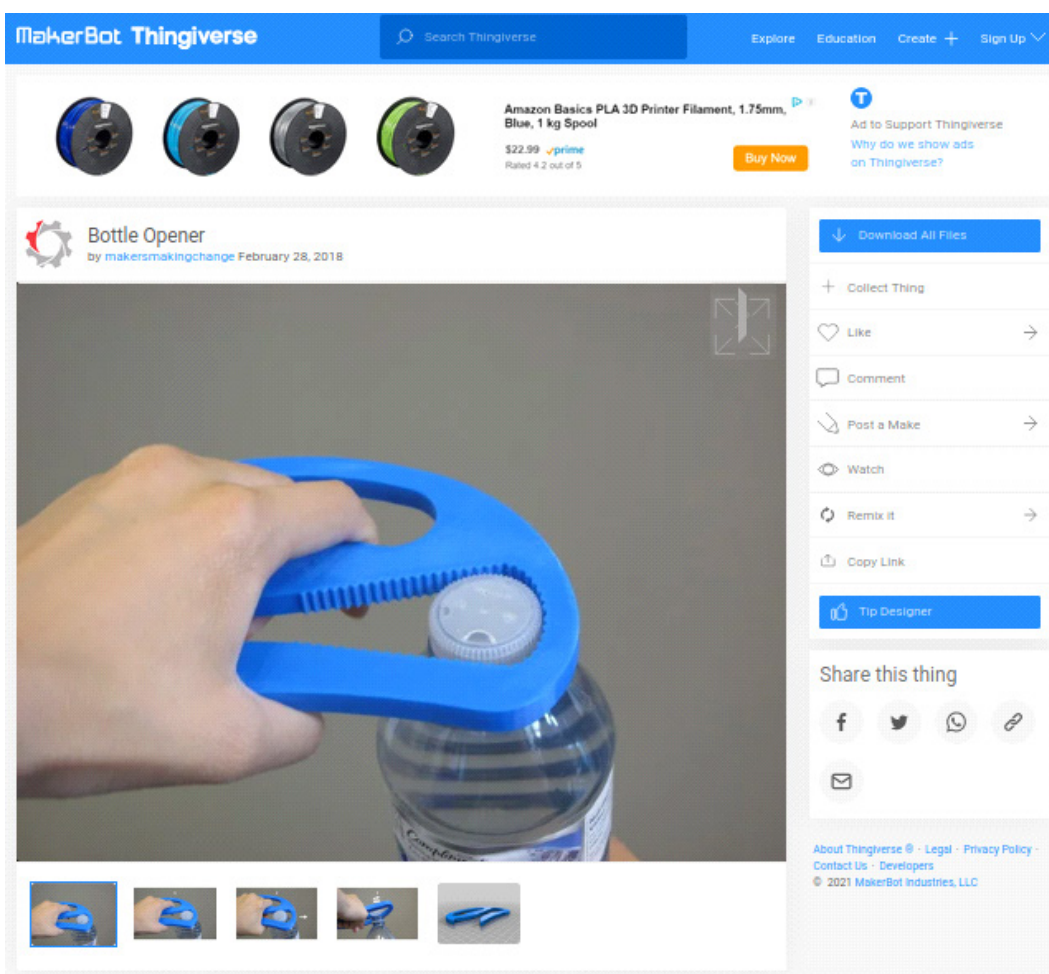
However, the “Things”-Tab generally shows a more interesting page:



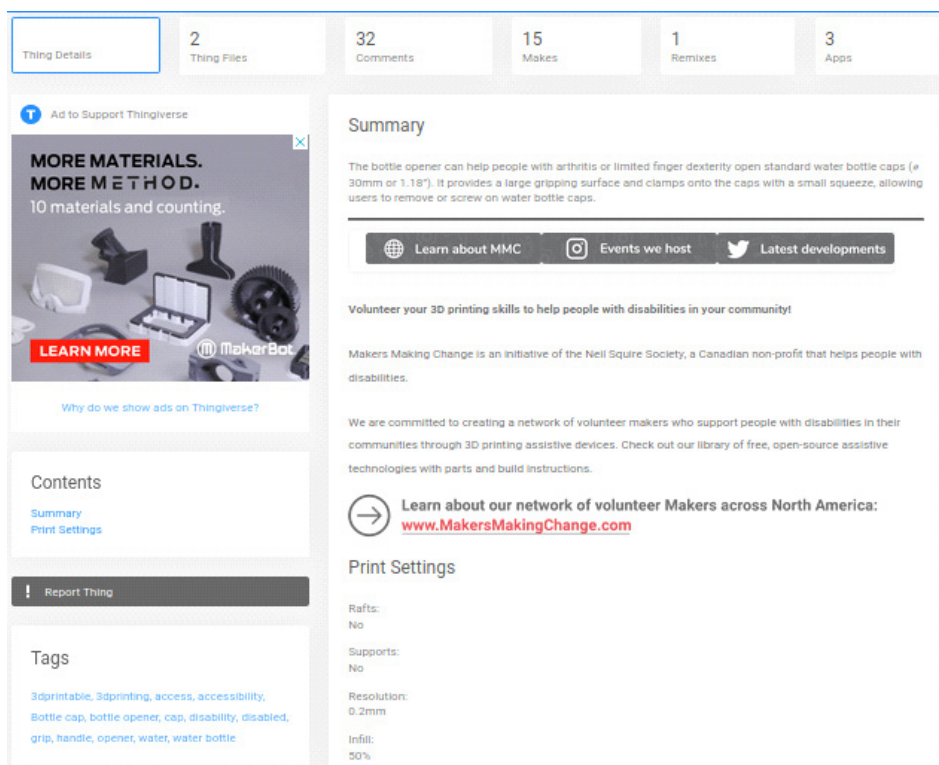
However, the “Things”-Tab generally shows a more interesting page: It starts off with the “NEWEST” items. However, you can also get the most popular items first, indicated by the number after the heart symbol (♥), by clicking on **POPULAR**:



Once you find an item that has your interest, you can click on the picture and more information on the item becomes available. For example, the next image shows the information if you click on the “Bottle Opener” (first item in the **POPULAR** list of the Assistive Technology Group):



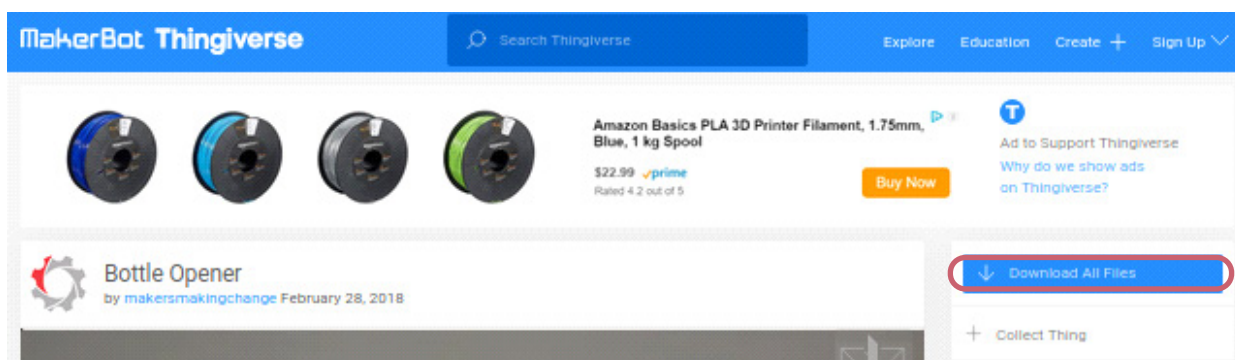
Underneath the main picture, there are generally other images of the item, uploaded by the designer. Furthermore, in most cases, images of the STL-files are shown. Sometimes, a video is available which shows the use of the item or gives instructions on how to make and assemble the item.



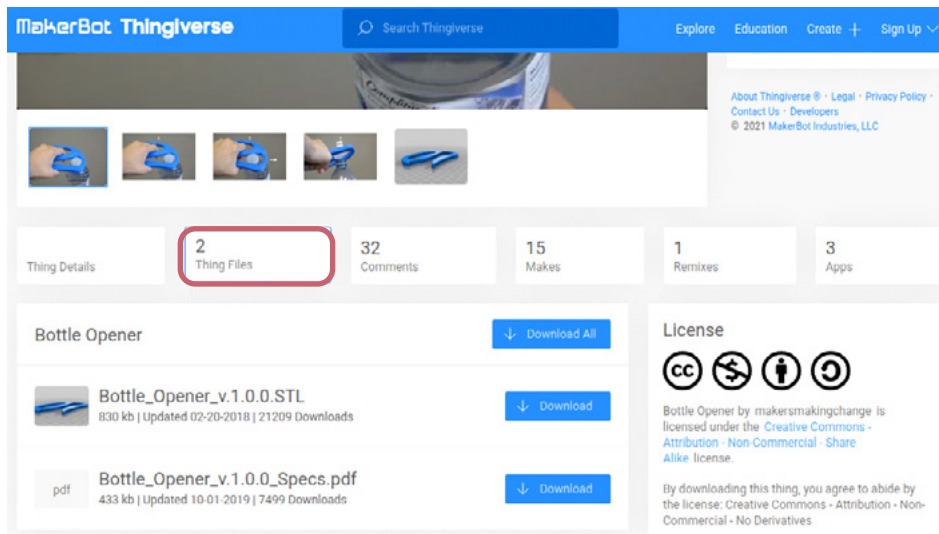
Underneath the pictures, a banner is visible with 6 menu items: **Thing Details**, **Thing Files**, **Comments**, **Makes**, **Remixes**, and **Apps**.

Initially, the **Thing Details** tab is visible. This tab shows a block with a short summary of the item, sometimes information on the Designer or assembly instructions, and generally also some information on parameters for printing (under the title **Print Settings**).

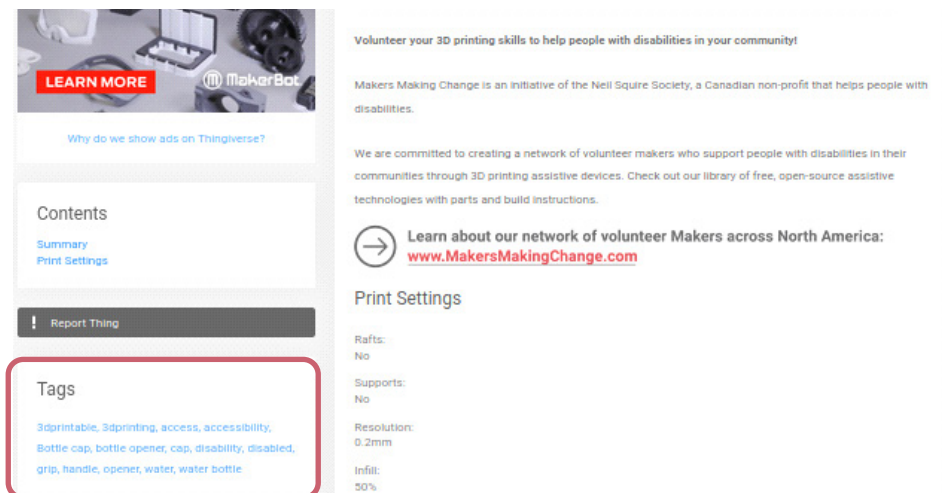
All files related to the item, i.e. model files (mostly STL-files) and images, can be downloaded by clicking on the menu item ↓ **Download All Files** on the top right. This will download the files in a ZIP-file.



You can also download individual model files by clicking on the “Thing Files” tab just under the main item picture:

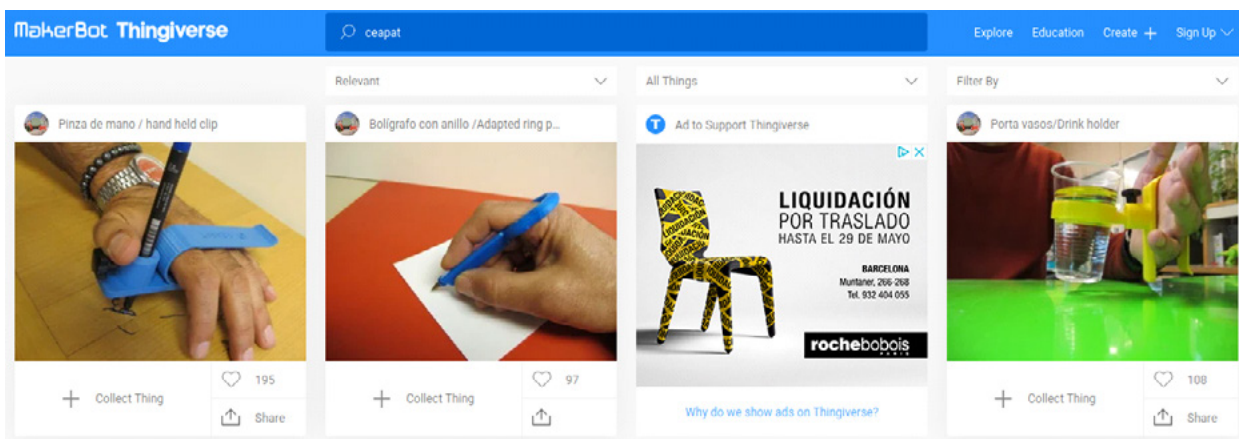


Within an item, you can search for similar items, by clicking on one of the words in the “Tags” block:

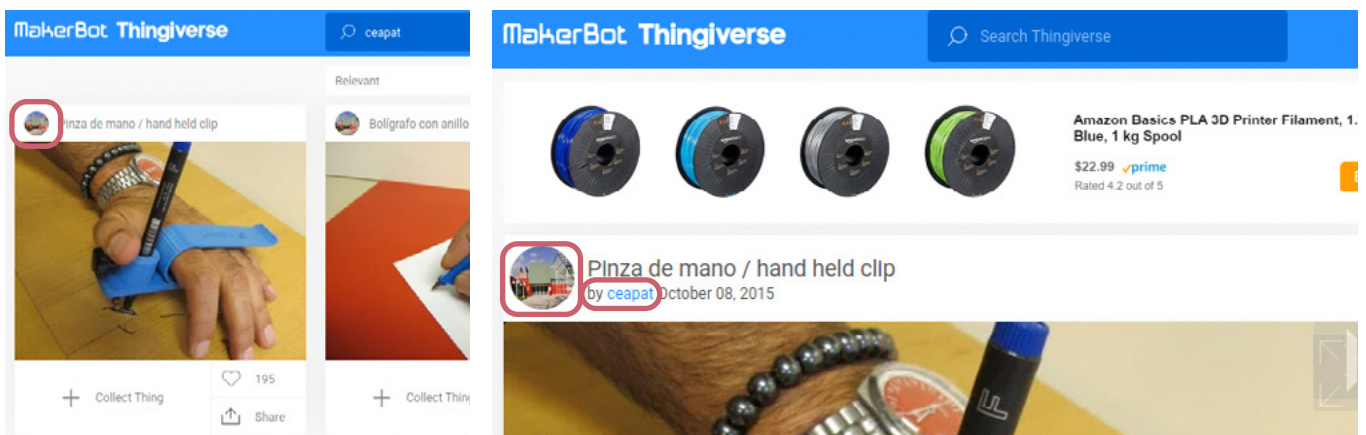


5. Search by designer

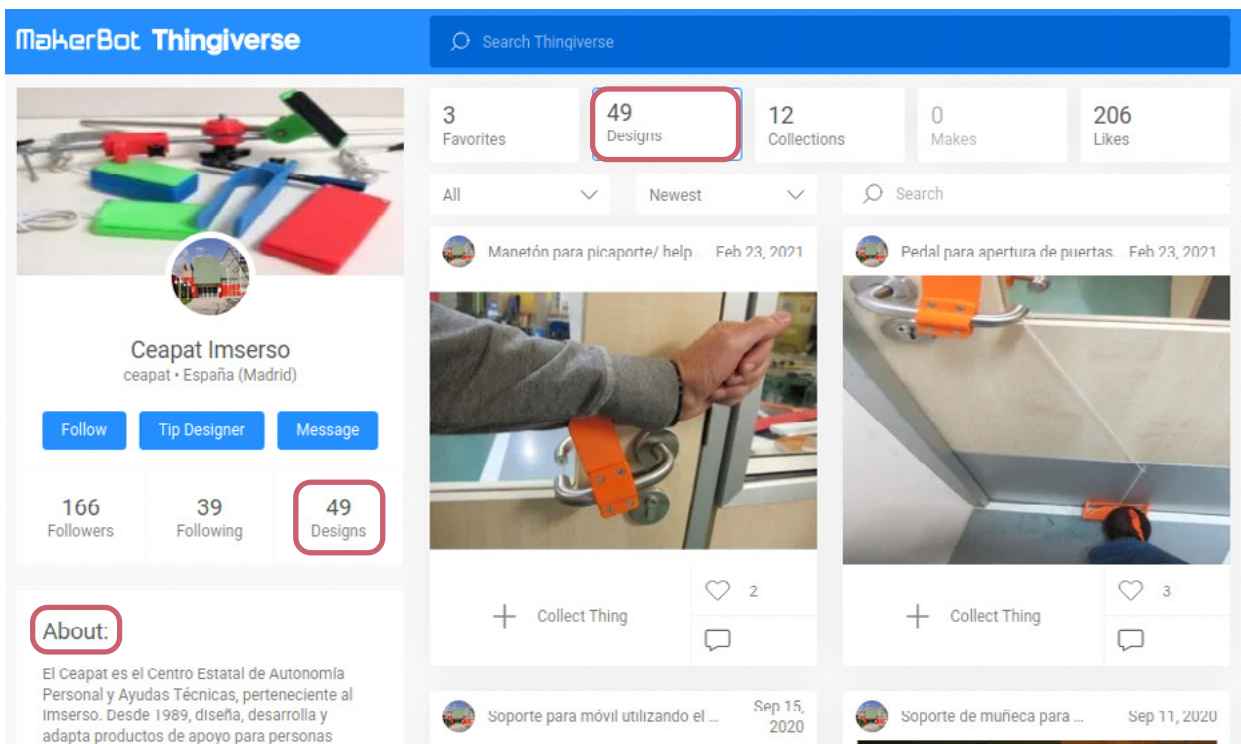
If you know the name of a Designer that has your interest, you can search by that name in the Keyword search bar. For example, by searching for “ceapat” (CEAPAT is a Spanish organization that designs, develops and adapts support products for elderly and disabled people), a list of items becomes available that was designed by that particular designer:



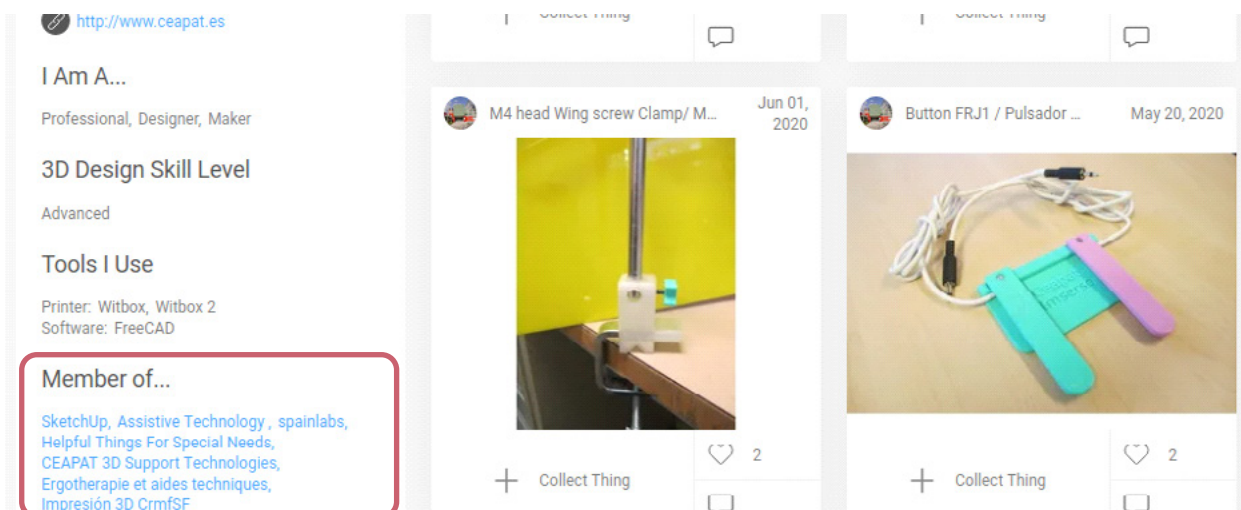
If you want to know more about this designer, you can click on the logo picture on the left of an item title. Or, once you have clicked on an item, you can click on the logo picture or on the name of the designer, which is located right under the title of the item:



The designer page becomes visible, which information on the amount of designs this designer has, as well as a description about the designer:

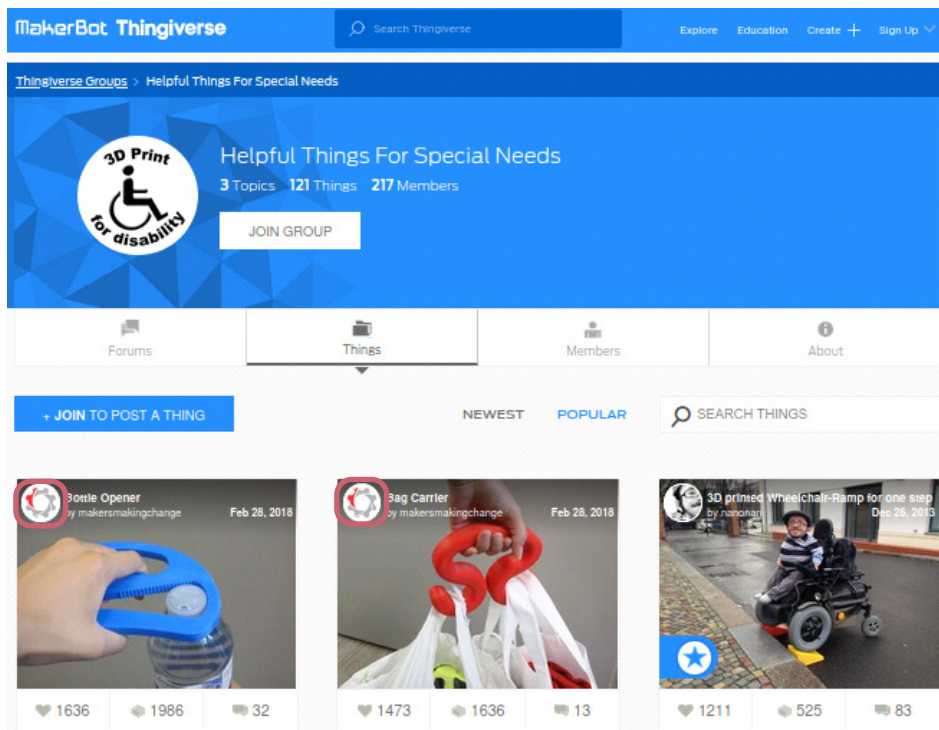


Further down the designer page, information is given on the type of designer (**I Am A...**), the 3D design skill level, the tools the designer uses, and the groups the designer belongs to (**Member of...**):

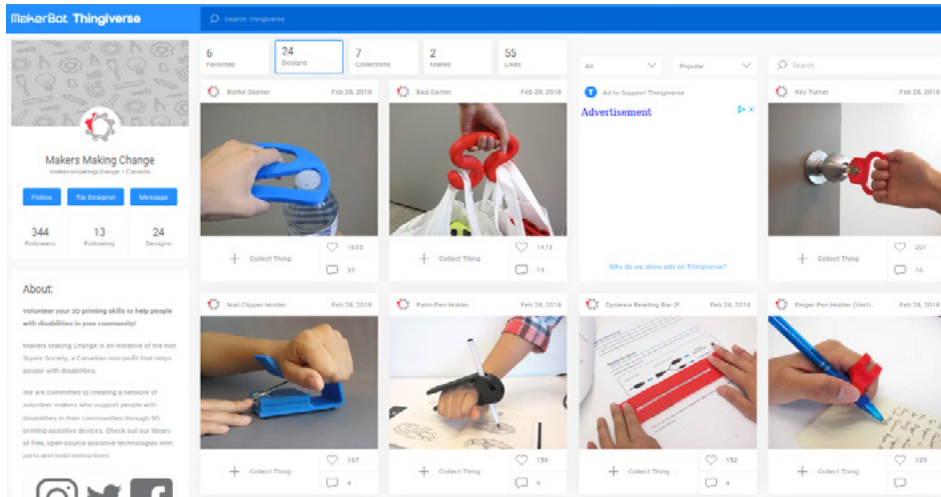


The “Member of...” section is interesting, as it gives leads to what Groups may be of interest to search through.

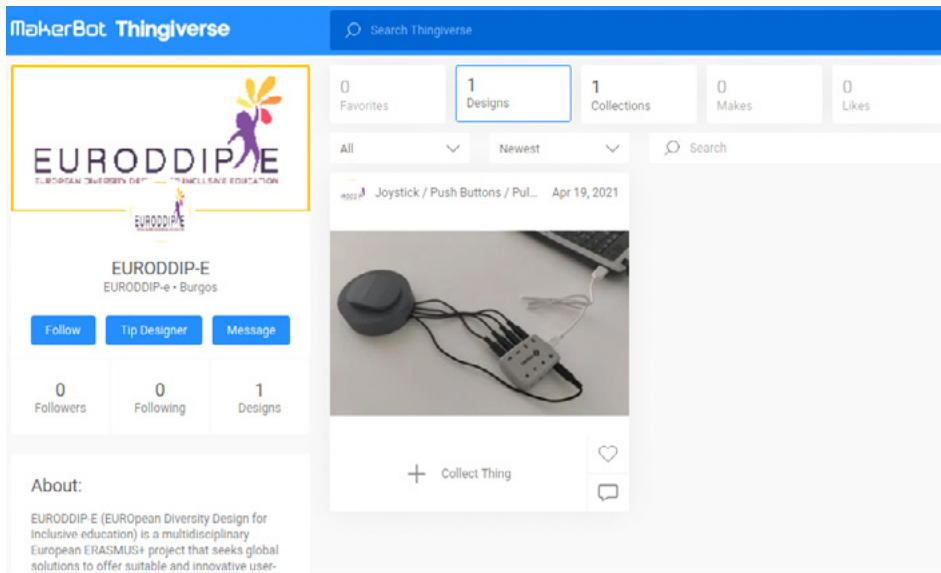
A good way of finding interesting designers, is to look at the popular things in a certain Group. For example in the “Helpful Things For Special Needs” Group:



The first two popular items are made by the same designer: Makers Making Change, a non-profit organization from Canada that helps people with disabilities. Within the first 20 designs, CEAPAT also appears several times.



The **EURODDIP-e** project, also has created a designer page:



Some interesting designers who have made assistive technology devices are given in the next Table:

DESIGNER USERNAME	DESIGNER NAME
<i>ceapat</i>	Ceapat Imerso
<i>EURODIPP-e</i>	EURODIPP-e
<i>kaiak</i>	Ito Akira
<i>Ko myomyo</i>	Kazuto Suzuki
<i>makersmakingchange</i>	Makers Making Change
<i>Pole ergo</i>	Guy.E ergotherapeute
<i>SONOKO</i>	Sonoko Hayashi

