



## Braille writing

ZŠ a MŠ Kostelec na Hané

 JiriVasko

[VIEW IN BROWSER](#)

updated 24. 8. 2022 | published 24. 8. 2022

## Summary

In the project, pupils will get to know how a person who can't see lives. As part of the project, a discussion will be held with a blind person who will introduce them to the issues of everyday life.



Easy



Short-term



Age:  
school+

### Special education tools

Tools:

Suitable printers: [Prusa MK3/S/S+](#) [Prusa MINI / MINI+](#)

## Necessary knowledge and skills

Every pupil needs to know the basics of modeling in Tinkercad. You need to know how to place objects, use a ruler and connect objects. Furthermore, it is necessary to be able to find the alphabet for Braille on the Internet.

## **Project objectives**

The goal of the project is not just to print a pexes, but to develop the pupils' horizons that there are people living among us who cannot perform daily activities like themselves. That there are people with various handicaps who are full members of society. Also teach them how they can help such people if they meet them. What they should, but also what they shouldn't do in such situations. Furthermore, to expand the pupils' thinking in an integrated way and enable them to learn the basics of reading Braille in a playful way.

### **Expected development of key competences:**

- problem solving competence
- communicative competence
- competence to learn
- social and personnel competences
- civil competence
- work competence

Physical output of the project: pexeso with braille.

## **Required equipment**

- Common computer classroom equipment, 3D printer.
- Printable .stl files with fonts (26 letters of the basic alphabet = 26 files named Brail - A, Brail - B, ...)
- Instructions for implementation - to observe the dimensions and location of the "dots"

## **Project time schedule**

In the initial part of the project, it is advisable to conduct a discussion with a blind or otherwise visually impaired person, or with a person who works with visually impaired people. If you do not know such a person, you can contact the branches of TyfloCentre, Tyfloservis or the Association of Parents and Friends of Blind and Visually Impaired Children in the Czech Republic, where they will certainly be happy to help organize such a meeting.

Subsequently, they proceed to the realization of the Braille pexes itself. Modeling and slicing should not take the pupils more than two teaching units. After printing, everything is done.

The printing time of one pair at 100% dimensions, 15% infill, 0.2mm layer height is approximately 1.5 hours. It is calculated by changing the color in a certain layer so that the pancake is one color and the output is another color.

## Project time schedule

In the initial part of the project, it is advisable to conduct a discussion with a blind or otherwise visually impaired person, or with a person who works with visually impaired people. If you do not know such a person, you can contact the branches of TyfloCentre, Tyfloservis or the Association of Parents and Friends of Blind and Visually Impaired Children in the Czech Republic, where they will certainly be happy to help organize such a meeting.

Subsequently, they proceed to the realization of the Braille pexes itself. Modeling and slicing should not take the pupils more than two teaching units. After printing, everything is done.

The printing time of one pair at 100% dimensions, 15% infill, 0.2mm layer height is approximately 1.5 hours. It is calculated by changing the color in a certain layer so that the pancake is one color and the output is another color.

## Workflow

1. Introduce the pupils to a brief description of the project and the goal of the project.
2. Show pupils where to find Braille (e.g. [HERE](#))
3. Give each pupil one letter from the alphabet to model.
4. Show pupils instructions to observe the location of objects. It is necessary that the layout is followed because even Braille has a certain standard and we cannot have, for example, different spaces between the relief points.
5. The pupils will each model one set of letters - one label in Braille and the other in Latin. Use Tinkercad's alignment when modeling letters in Latin. Detailed instructions - see video tutorial

6. Subsequently, each pupil performs slicing in the PrusaSlicer program. The parameters for the MK3S will be as follows:
  - Print settings: 0.2 mm QUALITY
  - Filament: Generic PLA
  - Printer: Original Prusa i3 MK3S & MK3S+
  - Supports: None
  - Fill: 15%
  - Change of filament at height 7.20 - Base color will be used black, output color will be white.
7. Print all models.
8. This pexes can be played together. You can also donate the printed pexes to other schools or directly to organizations working with visually impaired people as an educational aid. It is also certainly possible for interested pupils to print this pexeso at home for their parents

Note: For greater printing efficiency, it is possible to choose to print multiple files at once, so that printing takes place continuously.

Pexeso also serves as an integration aid for blind or partially sighted children into society. Society must first understand them in order to help them.

## Authors

Mgr. Jiří Vaško

## Model files



**braille-m.stl**



**braille-d.stl**

---



**braille-f.stl**

---



**braille-u.stl**

---



**braille-j.stl**

---



**braille-g.stl**

---



**braille-n.stl**

---



**braille-s.stl**

---



**braille-a.stl**

---



**braille-i.stl**

---



**braille-o.stl**

---



**braille-e.stl**

---



**braille-k.stl**

---



**braille-b.stl**

---



**braille-c.stl**

---



**braille-h.stl**

---



**braille-p.stl**

---



**braille-l.stl**

---



**braille-v.stl**

---



**braille-r.stl**

---



**braille-y.stl**

---



**braille-z.stl**

---



**braille-w.stl**

---



**braille-x.stl**

---



**braille-t.stl**

---



**braille-q.stl**

---



**braille-y-z.3mf**

---



**braille-g-l.3mf**

---



**braille-s-x.3mf**

---



**braille-m-r.3mf**

---



**braille-a-f.3mf**

# Print files



## braill-y-z\_02mm\_pla\_mk3s\_2h51m.gcode

⊗ PLA ⚙ 0.40 mm ≡ 0.20 mm ⌚ 2.85 hrs ⚖ 38 g 🖨 Prusa MK3/S/S+

---



## braill-s-x\_02mm\_pla\_mk3s\_8h32m.gcode

⊗ PLA ⚙ 0.40 mm ≡ 0.20 mm ⌚ 8.54 hrs ⚖ 114 g 🖨 Prusa MK3/S/S+

---



## braill-g-l\_02mm\_pla\_mk3s\_8h28m.gcode

⊗ PLA ⚙ 0.40 mm ≡ 0.20 mm ⌚ 8.46 hrs ⚖ 114 g 🖨 Prusa MK3/S/S+

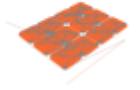
---



## braill-m-r\_02mm\_pla\_mk3s\_8h35m.gcode

⊗ PLA ⚙ 0.40 mm ≡ 0.20 mm ⌚ 8.58 hrs ⚖ 115 g 🖨 Prusa MK3/S/S+

---



## braill-a-f\_02mm\_pla\_mk3s\_8h27m.gcode

⊗ PLA ⚙ 0.40 mm ≡ 0.20 mm ⌚ 8.45 hrs ⚖ 114 g 🖨 Prusa MK3/S/S+

# Other files



**instructions.pdf**

---



**project-outline.pdf**

# License

This work is licensed under a  
[Creative Commons \(4.0 International License\)](#)



**Attribution—Noncommercial—Share Alike**

---

- ✘ | Sharing without ATTRIBUTION
- ✔ | Remix Culture allowed
- ✘ | Commercial Use
- ✘ | Free Cultural Works
- ✘ | Meets Open Definition