

PILOT ACTION EVALUATION

DT252 - PP7 - Partner Report on Pilot 3
Connecting to education

Version 1
11 2018





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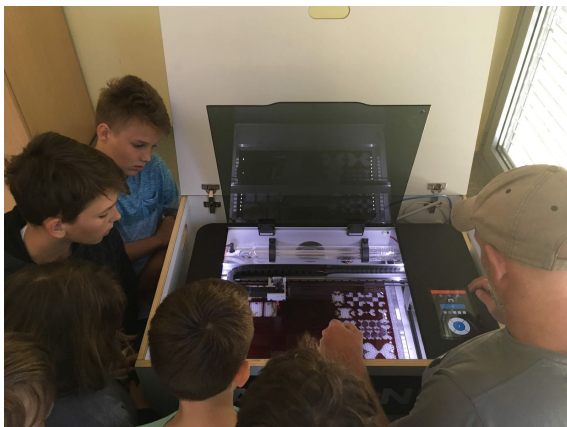
1. Short overview of the Pilot Action

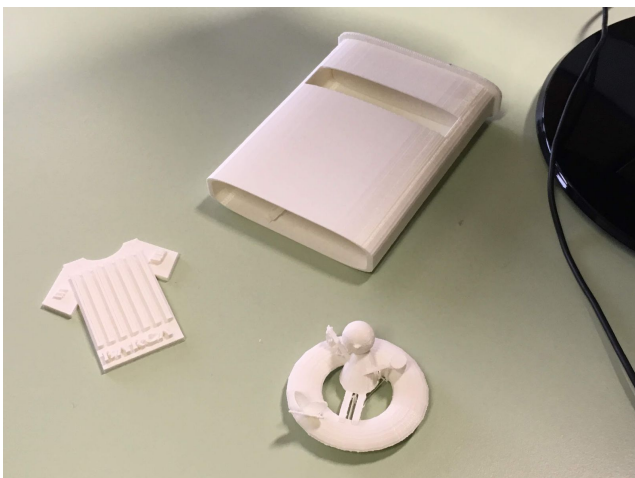
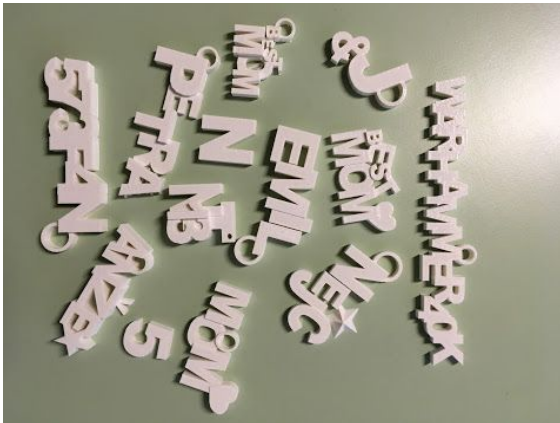
The Pilot 3, implemented in Slovenia by Roglab, lasted from January 2018 to June 2018 at two primary schools: one from Ljubljana (Primary school Tone Čufar), one from the surrounding of Ljubljana (Primary school Log Dragomer).

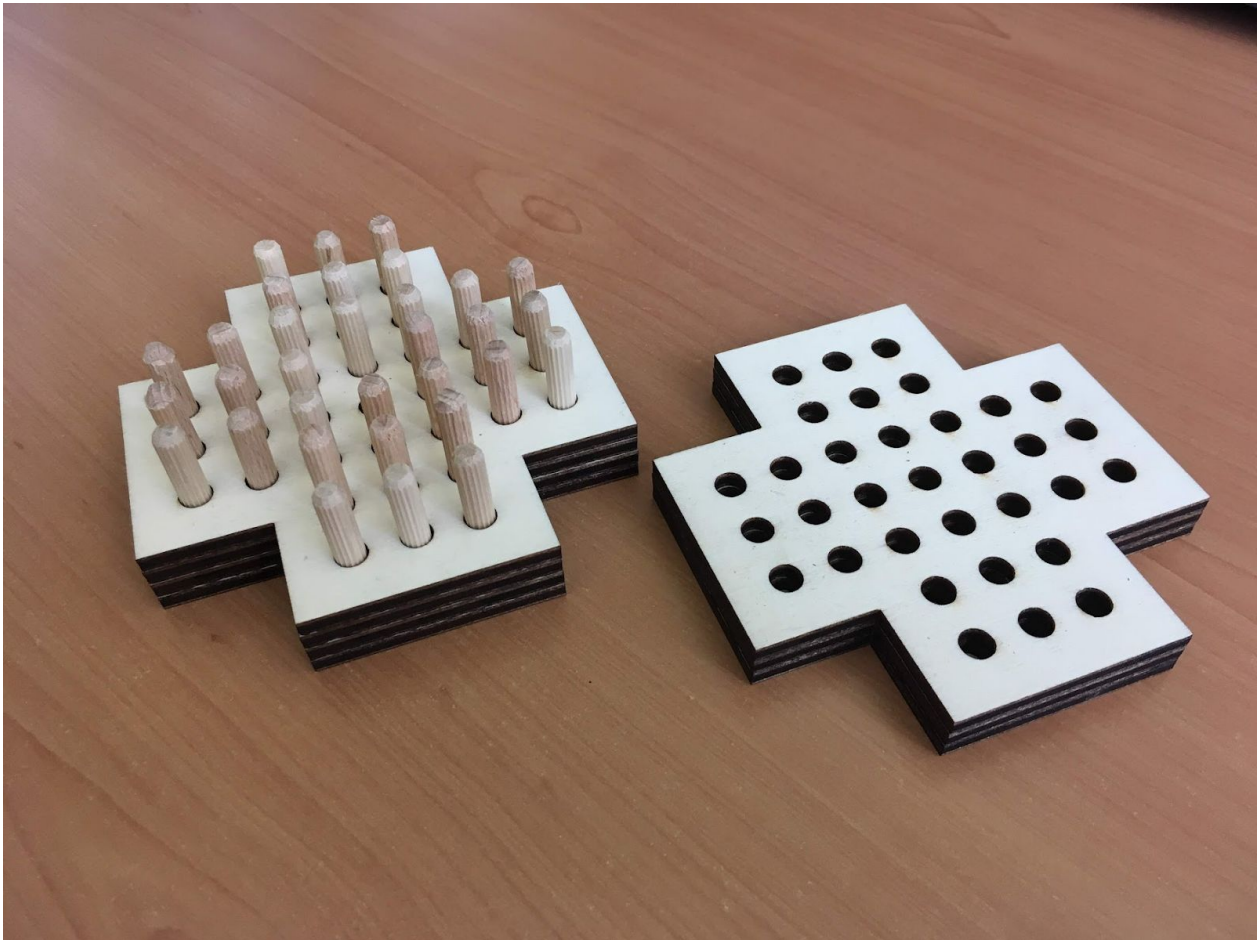
It consists of 25 workshops performed by several mentors at two schools. The public name of the pilot was “A fabrication workshop at school”. The content of the workshops was focused on the initiation on 2D modelling (Inkscape) 3D modelling (TinkerCad) and on the use of the lasercutter and 3D-printer. Target public were children from 9 to 12 years old. Most of the workshops were performed with the help of a transportable 3D printer and/or our transportable laser-cutter (FabBox).

The aim of the pilot 3 was to explore the possibilities to teach new technologies of fabrication within a school. One clue concept of the pilot was the close collaboration between the school teachers and RogLab mentors. The two teachers went first to several training on the equipment and software, so that they were able to perform some part of the workshops without the help of RogLab’s mentor.

Schools were chosen from an open call largely promoted among all schools in Slovenia. The open call was launched already in spring 2017 using mainly two channels: distributing flyers at the yearly national school principals symposium, having a presentation for teachers at the “Cultural bazar”, a yearly event for the promotion of scholar activities targeted to schools. Moreover, the communication of the open call was largely forwarded by the organization of the Cultural bazar, who has access to the email of all schools principals in Slovenia. Applicants (a teacher) had to present one or several ideas to be realized with the children with the help of RogLab’s equipment. We received only 3 ideas and the best 2 were selected.









Lessons learnt

During the preparation, exchanging ideas and experiences with other FabLabNet partners on these topics was very useful. For instance the toothbrush robot is an idea we got from Croatian partners and it was successfully implemented.

Stop Doing

- Stop teaching vector drawing with Tinkercad instead of Inkscape. We will cancel the introduction of Inkscape for children. The learning curve is too steep for them.
- Stop expecting teacher to be autonomous on these technologies (3d printing on their own with mentor). The training gave them an idea of what can be done with the equipment, but they are usually too busy to deeply dive into the 3D production world.
- Stop accepting 3d model from the children to be sent by email so mentor would print them at the fablab. 3D model should be printed during the school time or at school, on the 3D printer that RogLab left them during the whole period (5 months).
- Workshop less than 2 school hours (1h30).

Keep doing

- Keep using Inkscape only for vectorising analog drawing.
- Keep alternating workshops teacher /mentors: one workshop is performed by a RogLab mentor, the next is continued by the teacher.
- Keep leaving a 3D printer in the classroom for the whole period. Children take responsibility on it.
- Keep having a hands-on approach by having a manual finish of the printing (assembling, sanding, polishing etc.). So children are not only working with the mouse!
- Keep working with group from 8 to 12 children.



Start doing

- Teach the children how to be autonomous on 3D printing. Choose the best 2 or 3, most motivated and give them the responsibility of the printing while mentor is not present.
- After the learning the basis of 3D modelling where each participant printed its own simple design, start to gather then in teams of 3 participants so they start a team project. Each team would decide what to design, and collaborate in tinkercad to share the workload.
- Parallely to the workshop, give access to open hours for children in fablab, so they can finish their creations and get deeper knowledge.

3. Outcomes

During this pilots participants learned:

- Basic skills about 3d modelling, 3D printing, vector drawing and laser cutting.
- Learning basic workflow of 3D printing with tinkercad
- Realisation of several real prototypes.
- Advanced skill for more interested children and teachers
- Introduction to the possibilities that can offer their local fablab

Here are the expected impact at short term:

- Engaging a change of mind in the school professionals (teachers, head of schools, program deciders, etc.) concerning the possibilities of teaching new fabrication technologies in school.
- Expecting an increase of the innovation capacity of the region at mid term
- Spreading FabLab values among children: learning new fabrication technologies together, sharing knowledge, being creative in team.

4. Sustainability

Rich from the lessons learnt from this pilot, the pilot is easily repeatable. Steps/ requirement are the following :

- Get in contact with a teacher who show clear interest in new fabrication technologies (or launch a call for ideas)
- Schedule together the workshops (alternate teacher / mentors). 10 workshops over 3 months (5 with fab lab mentors, 5 performed by the teacher alone)
- Train the teachers to the technologies planned in the workshops
- Have a small portable 3D printer to be left at school during this period of time
- Having opening hours for the children in the fablab
- Weekly frequency, format 1h30 minimum for 8-12 children aged from 10-12 years old.
- Price for participant would be : 25€ per children. This includes:
 - 5 workshops, duration 1:30 (2 with mentor, 2 with teacher)
 - Rent of the equipment
 - Material (limited quantity of filament and plywood)
- Possibly source of co-financement:
 - Parents
 - School
 - City
 - Ministry of education