Maker-Saturdays for Families

Project summary

Handicraft School Robotti's Maker-Saturdays give families the opportunity to explore electronics and programming through art. Maker-Saturdays are a non-stop workshop that both children and adults are welcome to take part in. The main goal of our project is to empower children and adults with understanding of and insights into our digitalized world. We think that the best way to avoid the digital divide and inequality is to give people the chance to explore digital technologies with their own hands. In Maker-Saturdays, participants are introduced to digital and electronic manufacturing. Handicraft School Robotti is the first makerspace in Finland just for children, and also provides continuous weekly teaching for children. Maker-Saturdays are one type of short workshops given by Robotti. They are constructed around a theme and families can come and work on a given project together.

Aims

Handicraft School Robotti's Maker-Saturdays aim to make it easy for children and their parents to come and learn something that might be new to both. Media literacy work mainly seeks to give people tools to dissect and analyze media streams. In a similar fashion, we want to add code literacy to this endeavor. Code literacy is the dissection and analysis of digital technologies' underlying nature. By code literacy, we do not just refer to the actual code, but to all of the digital technology, from electronics to software development. Digital technology's operating models are not immutable laws of nature, but rather plastic models whose control is in our hands. The code does not reflect objective truth, but rather constructs laws in digital life. Without understanding how these laws are formed, we are not able to wholly participate in the discourse of our digital life. We think that basic understanding of the code is needed to understand our surrounding structures. We need to learn how to read and write the programmed world. Robotti's Maker-Saturdays enable people to learn these skills in a maker-culture-inspired environment. We are not aiming to raise a generation of engineers, but critically thinking, reflective and aware citizens. To achieve this goal, Handicraft School Robotti started organizing easy, approachable and open family Saturdays where children and parents can learn through fun electronics projects that combine science and art, and take the first steps towards deeper understanding of the digital world.

Target group: The main group is children aged four to 15, with their parents, grandparents or other caretakers. The aim is to keep the guided activities as easy as possible for even very young children to take part, with the possibility of trying more difficult things. Activities in Handicraft School Robotti have also emerged as a possible hobby for children with disabilities.

Media: Electronics and sensors; open source and free programs for 3D-design, vector drawing and learning programming; microcontrollers; 3D printers and laser-cutters

Methods: Constructivist learning theories, maker-culture in education, learning by doing, hands-on making led by workshop guides, peer learning

Duration: 15 minutes up to three hours, depending on the project in the non-stop workshop

Resources: Three workshop guides for 100 visitors

Project description

Maker-Saturdays' focus is on families. We welcome any kind of family to come and work together with their children. We have weekly themes, and our instructors help each family through the project. We also welcome independent projects, which we hope will increase as families acquire more skills in the area. We want to see what children can do with their

parents with digital technology when given the space and tools to do it. Our weekly projects focus is on different areas of digital technology, in order to create a wide assemblage of basic knowledge on digital technology. The first projects have been LED-postcards, which combine traditional art and craft with electronics. Even this sort of simple project helps the children – and parents – to understand a little bit about electronics, while also giving them ideas about how to use the learnt techniques in further projects. One of the main concepts in our workshops is to use materials that are easily attainable and affordable, making it possible for the families to continue this work at home. The same applies to the digital technologies; we aim to use only open-source hardware and software, making it easier for the families to get the same tools. Naturally 3D-printers and laser cutters are not in everyone's reach, but the software to design the models is. One of the core ideas in Maker-Saturdays is to promote digital technology empowerment, while enabling creativity to flourish in the digital as well as analogue realm. This means not just consuming digital media, but also creating it. Our grassroots-level approach gives children and their parents concrete, immediate and tacit knowledge of the construction of the digital world.

Methods

We rely solely on learning by doing. We build knowledge out of experimentation, exploration and creativity. We use art education as a way to loosen the often strict and rigid understanding of technology. Art allows exploration and mistakes in way that is beneficial and also fun. Learning by doing also leads to learning by teaching.

Exemplary description of one day/part of project

On Maker-Saturdays children and adults are welcome to pop into the non-stop workshop anytime they want. Depending on the theme, the workshop can be planned around one short project, or be a never-ending task. One example is our scrap workshop, where participants disassembled electronic gadgets and toys, fixed them if possible, or constructed installations or sculptures while understanding how the components and pieces work. In our Halloween workshop, those willing to try it out got to learn to solder (the youngest were four-year-olds), while the rest used art materials to connect the wiring. After the workshop, the participants can also try out and get familiar with other materials and machines such as the 3d printer, LittleBits components or laser cutter.

What needs special attention?

The aim is not to teach engineering skills or to necessarily build a working product, but to enable open-ended exploration of the digital world.

Project implementation difficulties

Even though many manufacturing methods and programming have become more affordable and easier to use in the past decade, there still is a learning curve to gain basic understanding of digital technologies. Difficulties arise in getting people past that first step.

What could be improved?

The next step for the project is to give participants the opportunity to make their own projects in an environment that has the proper tools for manufacturing, providing people to guide them if they need help.

Information about the organization that runs the project

Handicraft School Robotti is a non-profit organization launched in 2012 and based in the Art Centre Little-Aurora in Espoo, Finland. As well as the short workshops, it provides weekly teaching for children in electronics and programming, with an arts-based approach.

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