

# New output devices and how they can be used by designers, large and small

## Presenters

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## Description

Tangible objects offer unique opportunities for interaction and learning, and children benefit from activities like traditional arts and crafts or lessons centered around mathematical manipulatives. The traditional outlook separates physical and computer based activities into two very distinct categories, but computers are increasingly dispersing into the tangible world. A variety of new output devices allow for the “printing” of a range of physical objects, from embroidered patches to three-dimensional mathematical forms. We will argue that these technologies allow the computer to be integrated into children’s craft activities in novel and exciting ways, providing them with opportunities for rich and contentful interaction in both the tangible and virtual realms.

Our tutorial will address two ways in which new output devices can be leveraged in designing for children: we will show how the devices can be used in conjunction with new design software to allow children to design and build uniquely expressive and complex artifacts, and we will demonstrate how the output devices can be tremendously powerful tools in the workshops of designers of interactive tangible artifacts.

We will introduce three new output devices: laser cutters, three-dimensional printers and computer controlled sewing/embroidery machines. The machines that are owned by the Craft Technology Lab will be demonstrated, and examples of how each machine has been used by a member of the Craft Technology Group in each of the contexts mentioned above will be presented.

## Objective

Attendees should leave the workshop with a good understanding of three-dimensional printers, laser cutters and computer controlled sewing/embroidery machines. They will be introduced to ways in which these devices can be used by children and designers and should leave the session with good ideas about how the tools could be used in both contexts. After the tutorial they should feel prepared to consider investing in one of the output devices covered by the session.