Digital embroidery to teach ICT skills

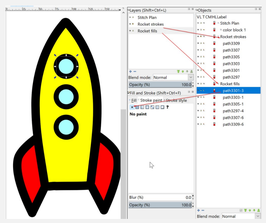
Objectives:

- Contribute to ICT education and valorize digital embroidery as subject to be taught in both making and ICT classes
- Digital embroidery allows learning vector drawing, programming, image manipulation, using complex software and general making skills.

Results:

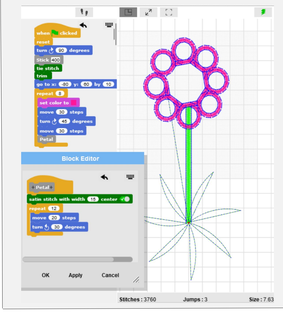
- Six small and large-scale successful outreach events
- Positive results in a satisfaction and apprehension survey: A questionnaire administered to 78 participants (M_age=18.10, SD_age=14.18, 47% F) at one event measured interest and perceived difficulty. Interest in the activity was high (on a scale of 1 to 7, M=6.91, SD=0.29). In pre-post comparison, participants have a stable image of the difficulty of drawing and vectorization but reevaluate downwards the difficulty of creating an embroidery with a machine.
- Successful implementation in a master-degree "making" course for educational technologists.
- No research on learning effects, so far.

Vector drawing



Vector drawing is a useful ICT skill. E.g. drawings in Word or PowerPoint, illustrations in learning materials, shapes for computer animations.

Programming



http://turtlestitch.org
Quote: based on a browser-based educational programming language (Snap!) to generate patterns for embroidery machines. It is easy to use, requiring no prior knowledge in programming, yet powerful in creating nowels patterns for embroidery.

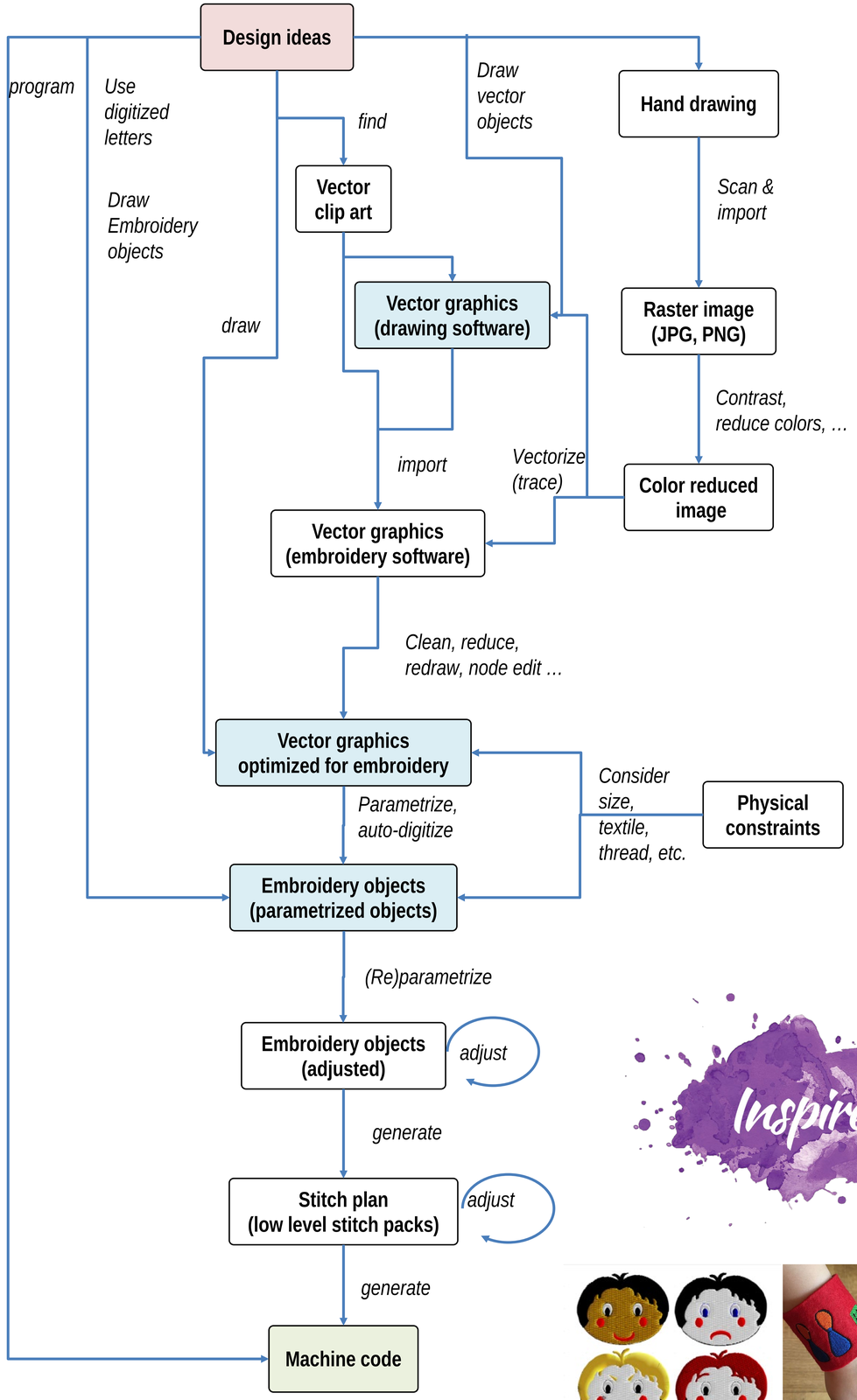
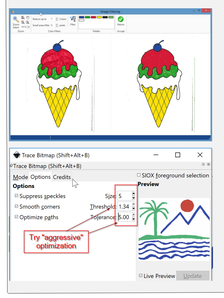
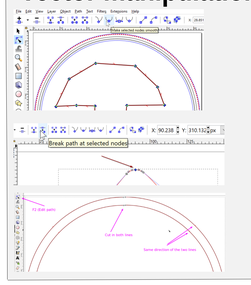


Image manipulation



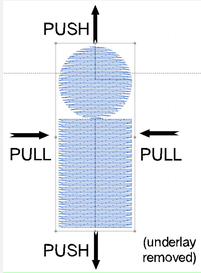
Raster images have to be simplified to be vectorized. E.g,. color reduction, change contrast, remove specks are useful skills for other contexts. Vectorizing/tracing skills are useful in many domains.

Vector manipulation



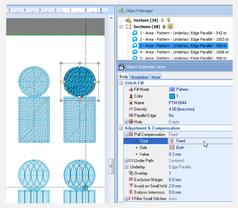
Imported or created vector "paths" must be reshaped, broken, glued, etc. This encourages learning advanced functionally of a vector drawing program or a vector drawing module.

Physical constraints



Each fabrication method must consider various physical constraints. Students will learn that a model seen on the screen may not «print» as expected and that model design has to take into account materials parameters.

Parametrization



Advanced commercial software such as Stitch Era allow training learners to look at objects that can be parametrized in many ways and to explore menus.

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