This exercise connects course learning goals on digital user interfaces to the art and images module, specifically to the design of digital paintbrushes. Answer questions 1 and 2 first; then we will watch a short video about the IO Brush before getting to questions 3 and 4. (The video is at web.media.mit.edu/~kimiko/iobrush/)

Paintbrushes in image processing and paint programs such as GIMP are a poor substitute for real brushes. Perhaps “digital” paintbrushes never can, or should, be designed to faithfully emulate traditional paintbrushes. But we can expect that digital brushes of the future will use features of emerging technologies and digital image processing in creative ways to augment our power to think and act.

1. List one or two ways in which GIMP’s digital paintbrush is a poor metaphor for real paintbrushes that artists use.

2. Imagine a digital paintbrush that could be designed with technologies available today. (You don’t have to limit yourself to technologies that are controlled by a mouse.) Describe how your paintbrush would offer new capabilities to artists that are not possible with traditional brushes.
3. The IO Brush is designed by Kimiko Ryokai, Stefan Marti, and Hiroshi Ishii at the Media Lab at MIT, with children in mind. Describe capabilities that the IO Brush provides to its user (regardless of whether or not these are children), but that are not offered by traditional brushes.

4. Explain two strengths or weaknesses of the IO Brush from a user interface perspective, referring to concepts such as familiarity and consistency, mappings and metaphors, feedback, negative transfer, or additional concepts that you identify.

5. Briefly comment on the degree to which, in your opinion, the IO Brush augments or constrains the user’s power to think or act, and on the extent to which it may support the cognitive development of children better than a traditional paintbrush.