

# KidPad: a Collaborative Storytelling Tool for Children

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## ABSTRACT

Collaborative storytelling occurs frequently when children play, but relatively few efforts have been made to support it with computers. This demonstration presents KidPad, a collaborative storytelling tool that supports children creating hyperlinked stories in a large two-dimensional zoomable space. Through the use of local tools, KidPad provides children with advanced interaction techniques in a collaborative environment.

## Keywords

Children, storytelling, single-display groupware, zoomable user interfaces (ZUIs).

## INTRODUCTION

Collaborative storytelling helps children develop interpersonal and story-related skills. Oral traditions are an example of how stories can provide an effective way of transferring and retaining information [5]. Storytelling also helps children develop communication skills. These skills are necessary for collaboration, and learning to work with others is another important skill to acquire [7]. Collaborative storytelling is often present when children play. However, there is currently little computer support for children's collaborative storytelling.

We believe that computers can augment the collaborative storytelling experience by allowing for storage, and the ability to copy, share, and edit stories. They can also provide an excellent medium to create non-traditional forms such as non-linear stories.

In this demonstration we present KidPad, a collaborative storytelling tool for children. KidPad provides drawing, typing and hyperlinking capabilities in a large two-dimensional zoomable space. Through these capabilities, children can create stories by drawing story scenes and linking them together in two-dimensional space. KidPad supports multiple users through the use of multiple mice on

a single computer. KidPad is available freely for non-commercial use at <http://www.kidpad.org>.

## DESIGNING KIDPAD

We believe children can play an important role in creating new technologies for children [3, 4]. Therefore, we established an interdisciplinary, intergenerational team of researchers that include computer scientists, educational researchers, visual artists, storytellers, elementary school children (ages 6-11) and classroom teachers. The children in our team were divided in three groups, one in each of the countries where our research institutions are located. We worked with all three groups as "Design Partners."

## LOCAL TOOLS

We designed KidPad to use "local tools" instead of menus or tool palettes [1]. Local tools are graphical objects that act as cursors and hold their own state (e.g. a red crayon local tool draws in red at its current location). Local tools provide a concrete visual interface that is very easy to learn for young children. In addition, this metaphor works well with the ability to work with multiple mice at the same time [6]. Multiple local tools can be active simultaneously, where each user controls one local tool at a time. Users can change the local tool they are using by picking up an unused local tool or by exchanging local tools with another user. Some local tools change their behavior when used collaboratively [2]. For example, two crayons that start drawing near each other combine colors and draw a filled shape.

## KIDPAD'S TOOLS

KidPad's tools are organized into three toolboxes that can be opened, to access the tools, or closed, to make space on the screen. Figure 1 shows all three toolboxes open.

Only the bottom-most toolbox is open when starting KidPad and it contains the minimum set of tools needed to create a story. Here, users can find colored crayons, an eraser, a hand for panning, magnifying glasses for zooming, and a magic wand to create links between scenes.

In the other toolbox at the bottom of the screen, users can find a letter tool that enables typing text, a brush that fills shapes with color, a hand that can pull and mold shapes, an arrow that can move individual shapes, a lasso that groups

shapes, a magic wand that copies shapes and tools, a magic wand that makes shapes wiggle, an x-ray tool that creates x-ray windows through which only certain shapes can be seen, and a question mark tool that when picking up another tool shows how that tool works.

The tools in the toolbox on the top left corner of the screen cannot be picked up, and handle the tasks of a typical file menu. Here users can find tools to start a new story, load a previously saved story, save the current story, save the current story in HTML format, print the current story, and exit KidPad. The entire interface is implemented without any text, making it accessible to very young children, and to an international audience.

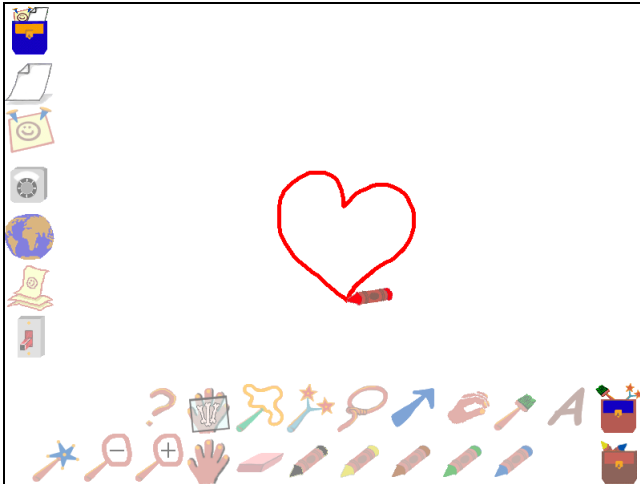


Figure 1: KidPad with all three toolboxes open.

### STORYTELLING

Stories created in KidPad are composed of scenes that are linked together. Scenes are made up of drawings, text and other features. The location of scenes in KidPad's large two-dimensional surface can have a meaning within the story. For example, drawing something inside a character's head might represent their thoughts. A scene may have more than one link coming out of it. If this is the case, these links provide different paths through the story. To tell a story, users follow links as they interpret the scenes.

### OTHER USES OF KIDPAD

Although KidPad was designed as a storytelling tool, it has also been used for other purposes. For example, children commonly use KidPad as a drawing tool.

When KidPad is used collaboratively, some game playing can develop. The most common form of playing is scribble wars. Another form of play involves zooming and/or panning while drawing. One child will take over zooming or panning while the other one draws. This can give way to some interesting and unexpected shapes being drawn combined with the excitement of motion. Children also play hide-and-seek games with the x-ray tool, drawing a shape inside an x-ray window, then moving the window and asking another child to find the hidden shape.

We have also used KidPad for presentations. This use has mostly been by adults who want to present information about projects that involve children. Children have also used KidPad to present their ideas. Using KidPad for presentations is only meant for expert users of KidPad, as KidPad's design was not optimized for this task. KidPad presentations look artistic, unconventional, and at the same time are easy to follow because the information in them is arranged spatially, in a manner that helps the audience better understand the presentation's content.

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