

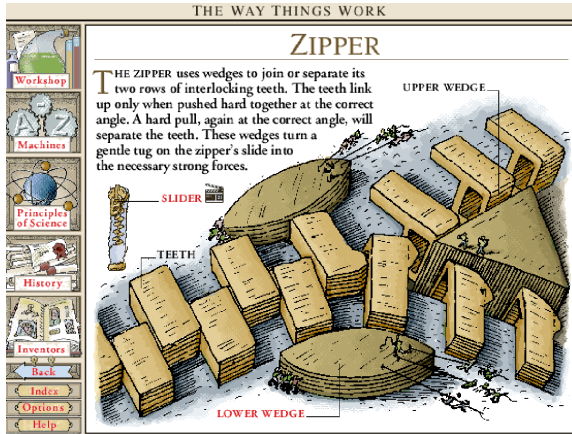


A Place Called Childhood

*Somewhere over the rainbow,
In a Never Never Land,
Back behind the House at Pooh Corner,
Where I know the Wild Things are,
There is a place called childhood.
This is a place where you can eat Green
Eggs and Ham.
You can meet Big Bird or Donald Duck.
This is not a place where adults roam freely.
This is a place where fantasy can be a reality,
And learning can be playful.
This is a place which now includes computers.*

Illustrations © Leo Comix

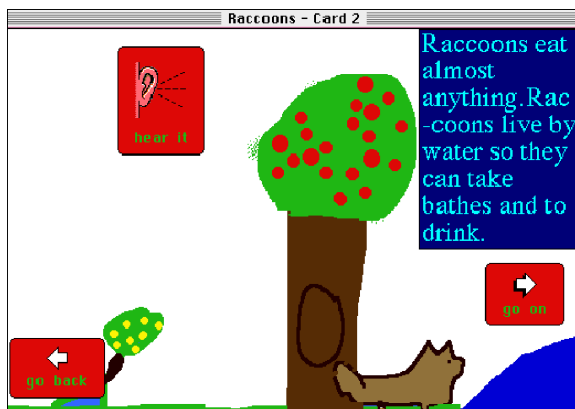
Today, children can interact with characters in ancient fables or new original poetry. With computer tools they can wander through animated reference materials that explain the scientific principles behind a zipper or a nuclear reactor. With computer games they can go out in space, back in time, or across the world and learn facts about science, history, and geography. Children can also be authors of their own multimedia experiences. They can create slide shows that feature the growth of a plant, music videos that animate the parts of the body, or



Way Things Work



Carmen Junior



Hyperstudio

interactive simulations that take them back to the time of the Civil War.

The games children play, the stories they read and create, and even the people they meet, all have changed thanks to new multimedia computer environments. As parents and adults, we used to take for granted that we understood what a young child meant when he or she said, "Read me a book," or "Let's play a game," or "Look what I made." Now, these simple exclamations can mean anything from "Let's read a Living Book" [e.g., *Grandma and Me* or *Arthur's Teacher Trouble*] to "Let's play a game of *Carmen Sandiego Jr. Detective*" to "Look what I've made with *HyperStudio* [a commercial multimedia authoring tool for children]." Even when children say, "Nice to meet you," they could be introducing themselves on the World Wide Web or in an email message.

The Secrets of Childhood

As you can see, the world of childhood has changed a great deal. As user interface designers, we must also consider changing. When we create computer environments for children, we must remember that children are not just short adults. We cannot water down the software and hardware environments we've created for adults and expect them to be valuable for children. As you may have figured out, children have their own likes, dislikes, and needs, which are not the same as those of adults. In fact, these likes, dislikes, and needs are not even the same from young children (three to seven years of age) to preteen children (eight to twelve years of age). That is why, as user interface designers, it is critical that we stop and listen, observe and collaborate with children of all ages. Unfortunately, few of us do. Instead, we assume that since we were once kids, we can remember just exactly what we liked twenty or thirty years ago. This is the stuff that myths are made of. If we propagate those myths, a lot of designers may find themselves listening to myths rather than to kids. To combat this, I like to meet the myths head-on. What follows are a few of my favorites about kids and computers.

"Children love bright colors . . ."

I can't tell you how often I hear this from user

interface designers, but I don't hear this from kids. Loud, garish screen colors aren't necessarily more entertaining, nor do they make learning elementary math or reading skills easier. Loud, garish colors are what adults think kids want. But children aren't color-blind. They can tell when they are being spoken down to—visually. Instead, we as designers need to stop hiding behind the primary colors and consider interesting visualizations, with dynamic screen layouts, intelligent font choices, and quality imagery. We can no longer get away with screens full of words, and a picture randomly placed here or there, especially for young children. They love visual images that have something to say. They love movement. They love variety. Having been brought up on Disney movies, Saturday-morning cartoons, "Sesame Street," and more, these young users are difficult to please by simply adding bright colors to a computer screen. They want images that make sense, fonts that are easy to read, animation and video that offer interesting characters or places that they can't find elsewhere. We would expect to create nothing less for adults. Our children deserve the same consideration.

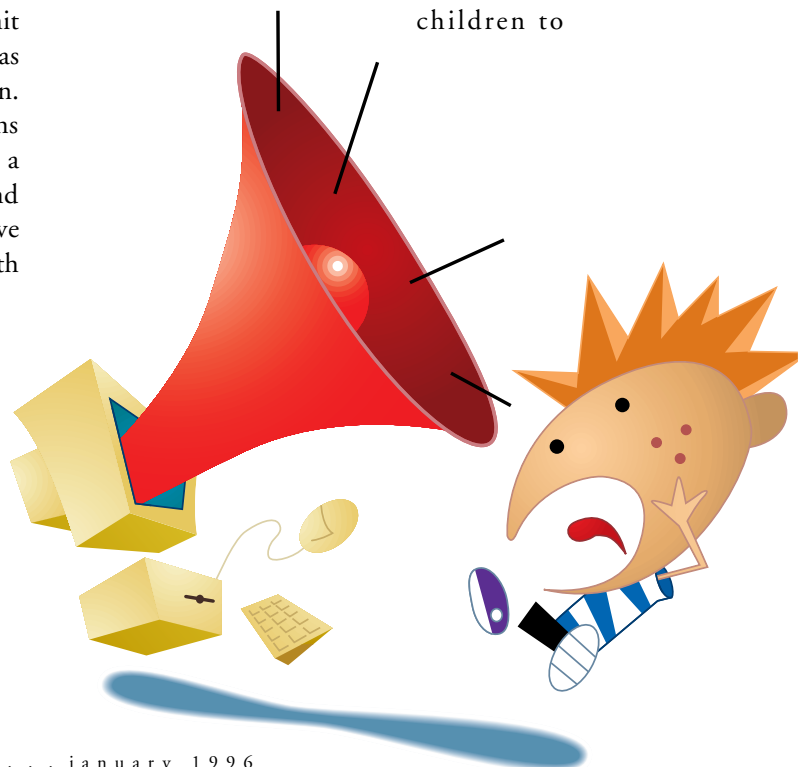
"Children need loud sounds to make it fun..."

A few years ago, "Kid Pix" was a runaway hit with children (and many adults, too). It was one of the first paint applications for children. It was also one of the first paint applications for anyone that included sounds. Every time a child pressed on a paint tool, a wacky sound could be heard. Since then, designers have come to believe that sounds are a must with every tool for kids—the louder the better. Although I have to agree that there are many times that sounds enhance software and offer a richer interactive experience, there are also those times that sounds can get in the way, confuse, or even annoy children. With "Kid Pix," it is fun to hear the paint drip, or the explosion when you clear a screen. However, with other children's authoring tools you can find a blaring trumpet or annoying shriek every time you cut and paste something. This does not

help the experience; merely, it adds unnecessary noise. We must ask ourselves as we would with any design problem: Does sound add to the meaning of the application? Does sound make it easier to use? Does sound make the experience more fun? If the answer is yes to any of these, then we should consider sound as an integral part of the design. If not, we should leave sound alone. Kids will understand.

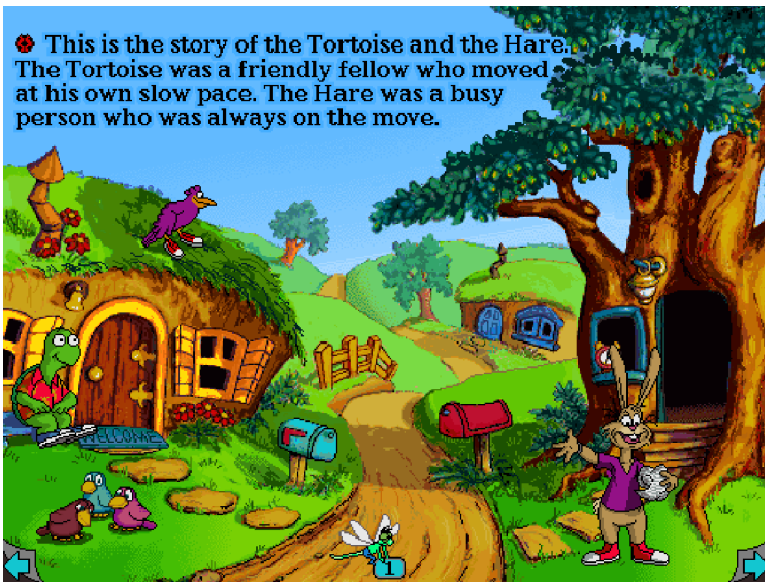
"Children only care what's on the screen..."

I have always believed that the computer interface starts from the moment children see a computer, continuing to the moment they touch it, until the moment they actually use the software. So often, we think that pretty pictures on a computer screen can make children forget that they are clicking a mouse button over and over again, or typing cryptic keyboard commands. Although children are content with such interfaces today, in the future they will want more. They will want to go beyond the keyboard and mouse, to integrate pieces of their own physical world into their computer environments. From LEGO blocks to stuffed animals, researchers have begun to create these types of alternative physical multimedia environments that ask children to

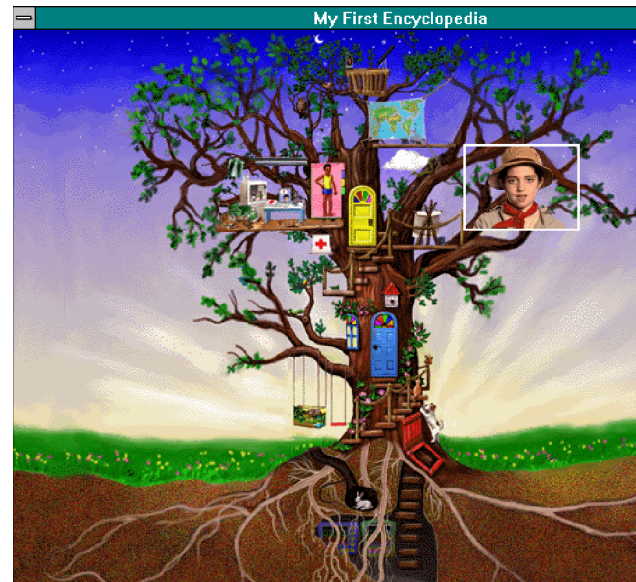


Allison Driun
University of
New Mexico
allisond@cs.unm.edu

DESIGN COLUMN EDITOR
Kate Ehrlich
Research Scientist
Lotus Development
Corporation
One Roger Street,
Cambridge, MA 02142
+1 (617) 693-1899
Fax: +1 (617) 693-5541
Kate_Ehrlich@crd.lotus.com



(left)
*The Tortoise
and the Hare*



(right)
*My First
Encyclopedia*

build, move, or touch computer tools in a way most familiar to them. These environments do not replace a child's familiar surroundings; rather, they become a seamless part of them, enhancing what is already there. Although there are isolated examples today, tomorrow's commercial products will incorporate these alternative physical devices. We as designers must be ready for the future by considering today what lies just down the road [1].

"Children have no attention span . . ."

Actually, children have an enormous capacity to do things that interest them. Have you ever watched a three- or four-year-old child using a simple Living Book such as *Grandma and Me*? They point and click at pictures and words for hours (e.g., select a chimney and a puff of smoke will appear; select a character and they will talk; select a word and it will be read aloud). Children love to select the same "hot spots" again and again, long past when many adults have grown bored and restless. It seems children love familiarity. It is a way for them to grow comfortable learning and exploring what is new. They don't like it, however, when adults ask them to repeat the same tasks again and again. But if they are at the controls, children love the experience. They will give an extraordinary amount of attention to something if they choose to do so. We as designers must find that

something, and offer children the hours of enjoyment and learning they have the energy and attention span for [3].

Children as Designers

When we design a multimedia product for medical doctors, we would think it a crime if we did not include a representative number of doctors in the design and testing process. Unfortunately, we don't see that crime when it comes to designing computer products for children. So often, children are asked for their opinions much later in the development scheme of things; too late to make significant changes. We need to remember that children's computer environments are for children and, therefore, we must respect their ideas as we would any adults'.

Some of today's bestselling multimedia products for children have done this. These products were created by listening to and collaborating with children. For example, at the Living Books Company, developers work with children after every few screens they design. Not only do designers receive valuable input, but they make significant additions or changes based on this feedback. In the case of the CD-ROM title, *The Tortoise and the Hare*, children were unhappy to find that when they selected a particular hot spot, the hare ran out, read a newspaper, crumpled it up, and left it on the



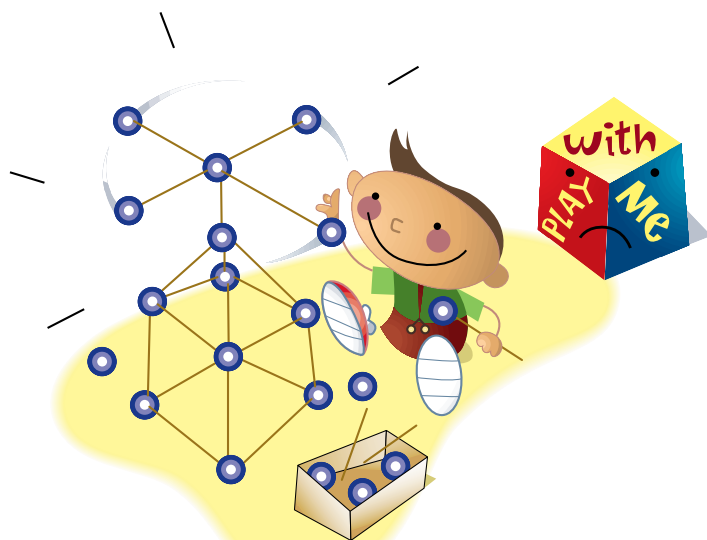
ground. Many children felt that the hare was littering. So the designers at Living Books added a hot-spot animation. Today, with the resulting product, if children select the crumpled newspaper left on the ground, the tortoise says, "Hey, Hare, did you forget to recycle that paper?" [5]

Another example of children being a crucial part of the design process comes by way of Knowledge Adventure. When designers began considering the interface that they would eventually develop for *My First Encyclopedia*, a multimedia reference title for young children, designers went off to preschool and daycare centers. Children two to four years of age were asked, "Where do you most like to play after you go home from school or daycare?" What designers heard was "play outside," and "climb a tree." This information was taken to heart and a "tree of knowledge" was created for young children to explore. As opposed to selecting keyword or menu choices, children can select any part of the tree branches and consider information about the stars, or the food we eat, or how our bodies work. It is a well-executed interface, which started with children's own ideas [4].

I myself have also enjoyed the experience of bringing children into the design and teaching experience. For the past five years, I have led with either Kate Whithey or Cynthia Solomon a tutorial session at CHI Conferences that asks

HCI professionals to partner with local elementary-school children. Each year, multiple design teams composed of three or four adult professionals and two or three fourth-grade students design a multimedia environment for the future that will teach children about a part or parts of their body. They use low-tech prototyping tools (e.g., paper, scissors, clay, balloons, and pipe cleaners) to prototype or mock up their ideas. What comes out of these afternoon design sessions are "walk-through digestive systems," "robotic brains," "room-sized eyeballs," and much more. What also comes out of these experiences is a better understanding of the importance of children as design partners. At CHI'95 we heard from our CHI adult participants such comments as "Kids really know what they like"; "The children seemed to be catalysts and sparked ideas I wouldn't have thought of"; "I underestimated the kids"; and "I think the children definitely changed the group dynamics and our design" [2].

What we find out from these experiences is that there are things we would not think of without children's help. My favorite example of this is a simple one that comes by way of Mark Schlichtig, Creative Director of the



Living Books Company. He has observed and worked with hundreds of children playing with Living Books. What he has found is that different age groups of children pick different hot spots. For example, four- to six-year-old children love to point and click on the words. They like to hear the words and they like to form sentences. What he didn't expect to find out is that for the most part, younger children select the words in the order they are found in the Living Book's text, while older children (7 years and up), who have mastered their reading skills, tend to jump around the sentences, selecting words and forming sentences of their own. Amusingly enough, Schlichtig has noticed that young boys tend to create the "grossest" sentences by randomly selecting certain words [5].

Without spending time with children, we as designers couldn't know these things. We couldn't take advantage of this knowledge to

design interfaces that offer children paths to learning and play in ways that seem natural to them. What is so refreshing is that children are honest design partners. They don't mince words when you ask them for an opinion. They will tell you, "I'm bored!" or "This is silly!" or "I Love this!" They will ask you "Why do I have to do this?" or "Can't I do that again?" or "What is this for?"

These are all important responses and questions that many times we miss working with adult design partners. With a child's simple honesty we can sometimes learn a great deal more than from a polite adult who doesn't want to hurt your feelings or doesn't want to be rude. Can those of us who don't design for children learn from the opinions of children? I say yes. Children offer bluntly honest views of their world. They have a lot to say in simple ways as design partners. If you let them, children can take you somewhere over the rainbow; to a Never Never Land; and show you a very special place called childhood. ☺

References

- [1] Bederson, B.B., and Druin, A. Computer augmented environments: new places to learn work and play. In Neilson, J. ed. *Advances in Human Computer Interaction*. Ablex, New York, 199
- [2] Druin, A., and Solomon, C. Designing educational computer environments for children. CHI'95 Tutorial. Denver, CO, Association for Computing Machinery, 1995.
- [3] Druin, A., and Solomon, C. Designing multimedia environments for children: computers, creativity and kids. John Wiley and Sons, New York (in press).
- [4] Holzberg, R. Personal communication. April 18, 1995, 5:00 PM.
- [5] Holzberg, R. Personal communication. April 18, 1995, 5:00 PM.
- [6] Schlichtig, M. Personal communication. April 28, 1995, 6:15 PM.