

What's in It for Kids?

Cynthia Solomon
Milton Academy
170 Centre Street
Milton, MA 02186 USA
617 898 2518
cynthia_solomon@milton.edu

ABSTRACT

In this paper, I raise some issues teachers are struggling with today about what are good computing activities for children.

Keywords

K-12 education, education applications, learning environments, programming, Logo, children, WWW, teachers

INTRODUCTION

As a teacher of elementary school children and teachers I am very pleased that CHI has taken notice of us and given us a forum to explore our present and future needs. Currently, the adult concerns of how to ride or tame the World Wide Web seem to have swept all of us into a kind of frenzy to network schools. It's great! Schools ought to be networked. But as teachers we are faced with what activities will provide kids with intellectual building blocks that will help prepare them for their worlds now and in the future.

I believe that providing children with computer-based learning environments that can be extended and adapted by the children themselves makes a major difference in the way children think of themselves as learners. I am struck by two paths we are pursuing in my school. In one path, we have set up a sixth grade writing lab. Now, I do work in a lovely private school where the classes are small and the teachers are lively and passionate about the children they work with and imaginative in what they do with them. Nonetheless, introducing this writing lab has made a significant difference in the quality and quantity of the children's writing. The writing teacher, a writer herself, has been teaching children for many years and is a master teacher. So putting two good things together, a powerful editor and a virtuoso teacher, really makes a difference.

A side effect has been that several children who have been timid in their learning styles now feel more confident since

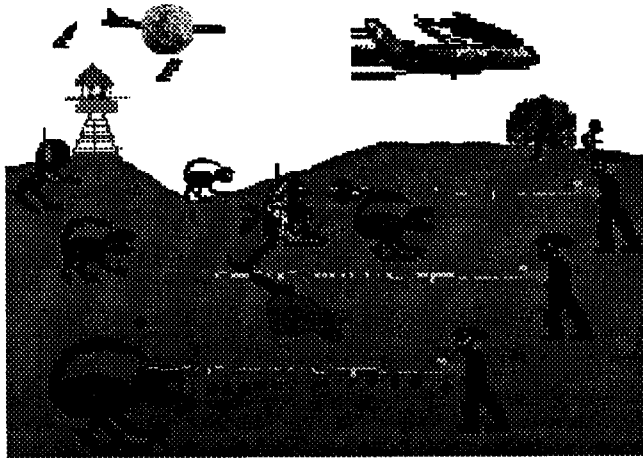
they work daily with computers that sadly don't always behave well.

The second path that we are following is the one I have been intimately involved with. I have been working with all the third, fourth, fifth, and sixth grade children in a Logo environment. We use MicroWorlds which can be thought of as a multimedia presentation environment as well as a Logo programming environment. The merger of these two worlds is not complete. It is at the cusp of what I hope future environments for kids will contain whether they are new versions of MicroWorlds, Cocoa, or Alan Kay's new language, Squeak. These are programming environments in which kids can build games, explore traditional mathematical ideas through articulating algorithms such as finding factors, enjoy turtle geometry, or develop interactive microworlds to teach themselves or younger children.

They can also create bit-mapped pictures such as some third graders did.

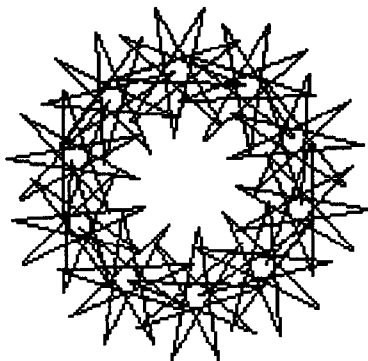


Here, a fourth grader is making an interactive sci-fi presentation.



Using MicroWorlds, I have collaborated with the social studies teachers, and so children develop multimedia presentations which incorporate quizzes and animated games.

Recently, fifth and sixth graders have been developing games for second and third graders. The children will be able to test out their games and get feedback from the second and third graders.

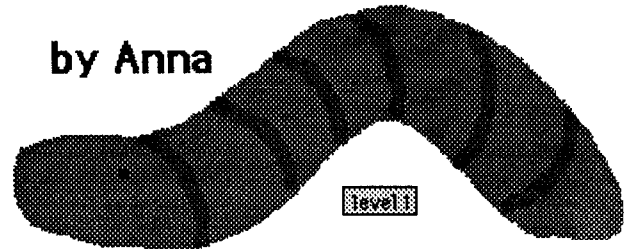


In collaboration with the fifth grade science teacher, we have been helping children make Lego constructions based on their own designs which they then control through Logo programs.

I'm always surprised by kids and their inventiveness. Kids are creative, but they need environments in which they are safe to be creative. The children in a MicroWorlds environment put together animations using turtles and having the turtles transform their shapes into bees, birds, ships, trucks and so on. As one turtle collides with another its role is changed by the child designer and programmer. The children create incredible witches and goblins for their Halloween presentations and create characters out of their Ancient Egypt studies.

Catch me if U can

by Anna



Directions for level 1: Try to catch the worms by clicking on them. When clicked on, the worms will turn into butterflies. Catch the rainbow butterfly and you win!



What continues to amaze me is both the similarity and the diversity of their thinking. They share how to do things. They also put together voice and music as background for their work. So they have ways to make music, sound, animation and graphics within one environment and this environment allows all of these events to be under program control of the child.

In this same environment, children can explore computational geometry in the form of turtle graphics. But exploring turtle geometry requires more teaching on my part and a need for time to debug. One of the drawbacks of working in a school which has so many wonderful activities including physical education, art, woodworking, music, drama, chorus, orchestra is that the children's days are crowded and time with them is often shorter than I would like. So, my teaching strategies have to adapt to the circumstances. I see children usually for only one 40 minute period a week except when we are working on special projects for social studies or writing. But this year, I am seeing the sixth graders twice a week and so I was able to do some turtle geometry with them. And wow! They did things I had never seen before. As a result, I fell in love with turtle geometry all over again.

Anyway, I look forward to an opportunity to discuss the educational relevance of programming environments. Although interfaces are important they need to be closely linked to the content, goals and purposes of the environment. Some of the difficulties in the merger of a presentation mode with a programming environment are due to the dictates of user interfaces. Do we have many microworlds each with its unique interface? Is it possible to design a designer's programming environment for kids? I believe we need tools that have consistent interface but nonetheless allow for powerful building blocks to be put in the hands of children; and so, I welcome CHI's involvement in enriching children's learning environments by opening dialogs with practitioners.