

The Mission

The Elementary Advocacy Groups' Mission is devoted to the promotion of the use of MIT's Scratch programming environment in elementary schools. As predicted, in the classroom, the computer is becoming as ubiquitous as the textbook. Educators agree that lesson plans should seamlessly embed the use of computer resources. There are many reasons why this transition has not yet come to fruition. One of the obstacles has been simply the lack of the right tool. The Elementary Advocacy Group believes one such tool now exists, and it is MIT's Scratch programming environment.

What makes Scratch different from other computer applications? First and foremost, Scratch is a simple programming environment that is easy to learn. Teachers who are novice programmers regardless of their level of trepidation with the right support can easily learn to use Scratch. Students pick it up quickly and enjoyably. The MIT Scratch Team has supplied the needed support in many ways with free classes and Webinars, but most importantly are their Web sites. There is a Web site devoted to the kids at <http://scratch.mit.edu>, and a Web site devoted to teachers' professional development at <http://scratched.media.mit.edu/>. The sites include an impressive and vast set of ever increasing teacher resources. In addition, the sites are impressively monitored. When posting a question to their discussion board your answer appears almost in real-time. This is quite an achievement.

It has been known that users learn computer programming best when they can tinker and fiddle around with their code. With that in mind, Scratch was designed for users to tinker as they program. This enables the student to try out different ways of solving problems. Tinkering personalizes learning and solution creation. It promotes the use of the iterative thinking process. For example, a teacher assigns a simple multiplication problem using Scratch. She instructs the class that the end product must work correctly and graphically represent how their solution has solved the problem.

Each student with the right scaffolding can demonstrate their own individualized solution. In computer programming there are many ways to arrive at the right answer, and countless ways to graphically represent the solution. The salient point is does the student comprehend the underlying principles, and is s/he capable of duplicating a similar type of problem.

Educators and computer programmers have supplied us with computer manipulatives. These help students understand difficult concepts through graphical models and simulations. One advantage of Scratch is it not only allows the student to create their own manipulative, but

offers the ability to remix/build upon, and collaborate with other students' to build a better learning tool.

It is important to include in this discussion that Scratch can be a powerful tool for the Learning Disabled community. The LD community depends heavily on computer assistive technology. These students can often organically express themselves better through the use of computers. Scratch should be readily available to all LD students. It is a perfect vehicle for high functioning students to begin to customize their own computer assistive technology.

The advocacy group is acutely aware of the difficulties of implementing our proposal. It is hard to change how lessons are taught, and for computers to be accessible to all students. This change calls for the inculcation of a new teaching subject matter and perhaps new methods of teaching styles. There are many blocking issues but one stands out is few higher education teaching programs include Scratch in their curriculum. Professional development is down due to budget shortfalls, and in addition, teachers are feeling pressured to keep up with their increased workload.

With all these obstacles, why do we ask for Scratch integration now? The answer is despite the hardships the critical mission of education is to keep our children competitive in today's 21st Century global society. The tool to embed computing into education exists now and is ready to use. The advocacy group feels it is imperative to start this mission now by teaching programming and computing at an early age. Let's start Scratching now!

<http://cacm.acm.org/magazines/2009/11/48421-scratch-programming-for-all/fulltext>

http://wik.ed.uiuc.edu/index.php/Manipulatives_in_Mathematics_Instruction

<http://wiki.scratch.mit.edu/wiki/Remix>