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Design Activity: Students Designing Their Own Video Games

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DESIGN ACTIVITY

students designing their own video games

introduction

When you think of video game designers, often the stereotype is a group of self-proclaimed computer geeks sitting around in t-shirts and sandals programming code until the early morning hours. With the availability of several new software programs, the video game designers of today just might be the children in your elementary classrooms. It used to be that you had to know advanced programming languages such as Java or C++ in order to design a video game. However, today there is a multitude of software programs available (many of them free) that are easy to use, providing elementary-age children the opportunity to create their own video games. Now, rather than playing video games for hours, students can spend their time exercising their imaginations while designing their very own video games!

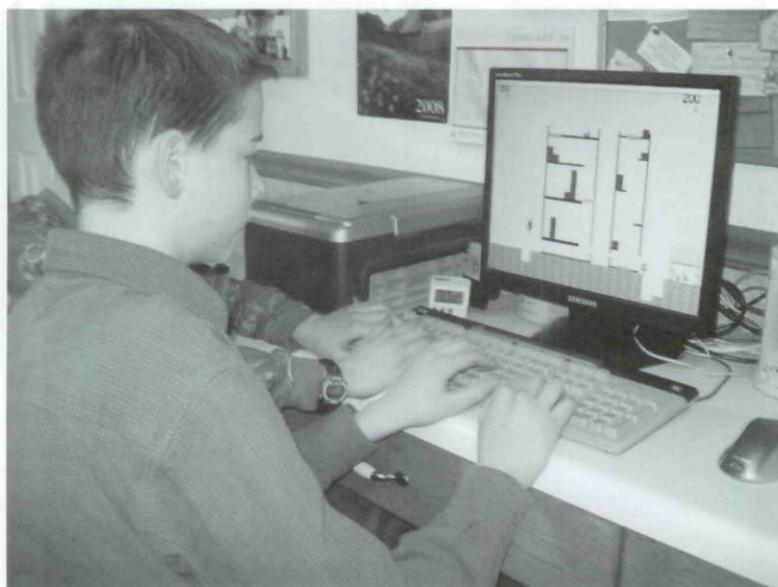
Teaching a unit in video game design to elementary-age children may be easier than many teachers think. There are many easy-to-use software programs available, and many of these have a free or "lite" version that is limited in its application but typically provides more functions than any but the most advanced students will need. In addition, there are many resources on the Internet, including tutorials and support groups. Some of the more common software programs that have been successfully implemented into elementary level schools or programming summer camps include: Game Maker, Multimedia Fusion, Games Factory, and Squeak. A quick Internet search will allow the teacher or student to download free software and tutorials or participate in support groups. If students' abilities exceed the "lite" version, the advanced versions of the software are generally available for \$50-\$100.

by Steve Shumway

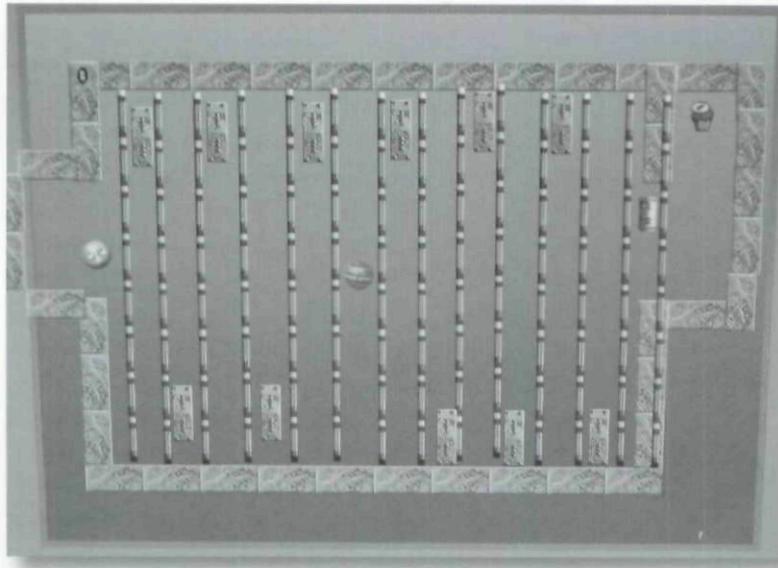
One of the easiest ways to approach teaching this subject is for the teacher to download the free version and then work through a beginning tutorial. Most of the programs use a drag-and-drop system that allows users to create games by visually organizing icons on the screen. Other programs use a grid where rows represent "Conditions" and columns represent "Actions." An "if-then" protocol is used, so that when condition(s) in the row are met, the action(s) in the columns will execute. Each game typically comes with a set of standard action libraries, covering such things as movement, basic drawing, and simple control structures.

methods of teaching

Children of the new "video game" generation are very adept at learning intuitively and seem to have fewer inhibitions when it comes to experimentation and investigation. Rather than try to teach the students all the commands possible and then have them create a video game from scratch, a teacher might give the students a sample game and then teach them how to manipulate an existing program. After some simple manipulation, the teacher can show the students a few more functions to expand their design abilities. Hopefully the students will want to make even more changes, and the teacher can provide instruction in a just-in-time format. Once the students are proficient at some basic programming skills, they can then sit down and design their own video game. When designing their own games, a formula for success typically



Designing a video game.



Example of a game developed by a fifth grade student.

includes 1) brainstorming with a group an idea for a game, 2) creating sketches of the characters and game environment, 3) making a storyboard of the game progression, 4) drawing the characters and environment and then creating the code using the software, 5) problem-solving and troubleshooting game characteristics to make the game operational, and 6) market research on fellow students and continued improvement of the game.

design in the classroom

Elementary educators are well aware of the excitement that children display when given the opportunity to engage in the design process. It is amazing to watch the excitement and creativity that is manifested when children are given cardboard, paper, scissors, and tape dispensers and then given opportunities to design a solution to a problem. Using computers and software to design basic video games expands the teachers' opportunity to have their students build something electronically. The troubleshooting and problem solving that will accompany this activity will develop skills students can use in a multitude of

situations. Allowing children to participate in this type of activity is important to the cognitive development of children. Mitchel Resnick and Natalie Rusk, co-founders of the Computer Clubhouse in Boston (Resnick and Rusk, 1996), espouse that these types of design activities are important because they enable youth to become engaged as *active participants*,

giving them a greater sense of control (and responsibility) over the learning process. In addition, design activities encourage *creative problem solving*, and facilitate *personal connections* to knowledge, since students often develop a special sense of ownership for the products (and ideas) that they design. 

resources

- International Technology Education Association (2000/2002/2007). *Standards for technological literacy: Content for the study of technology*. Reston, VA: Author.
- Resnick, M., & Rusk, N. (1996). The computer clubhouse: Preparing for life in a digital world. *IBM Systems Journal*, 35 (3-4) 431-440.

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Programming sample multimedia fusion.

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