Making it Real

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Some have proposed that realistic problem situations are better for learning. This issue contains two articles that examine the effects of "making it real" in computer architecture and human-computer interaction.

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Which is better for learning: a realistic problem situation, or an artificial one? This question is often considered (and discussed) by computing educators:

—Should I use an industrial-strength IDE or one designed for novices?

—Should I use a real network or a simulator?

—Should CS1 be taught in Scheme or C++?

—Should I "fire" nonperformers from student project teams, or just lower their grade?

The answer to each of the previous questions is, of course, it depends. It depends on what is to be learned, the instructor, the students (individually and collectively), the culture, and other factors. The important question here is how does it depend on these factors.

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Understanding the effects of problem situations and other contextual features on learning is an important problem in all areas of education, not just computing. But computing, by its nature, makes it more possible to present the students with realistic problems, so it is of greater importance in this area than others. Let our discussions continue, but let us also evaluate our approaches, report our results, and try and increase everyone's understanding.

The two articles in this issue look at the effects of "making it real" in computing education. Each describes the effects of providing a realistic context in teaching a course, backing up their claims with careful evaluation.

The first article, "Context as Support for Learning Computer Organization," by Allison Elliott Tew, Brian Dorn, William D. Leahy, Jr., and Mark Guzdial, compares two versions of a computer organization course, one using a traditional approach, where student work is done in simulation on an idealized artificial architecture, the other using a specific personal game system as its target architecture. Their results suggest that the content knowledge learned by these two approaches are essentially the same, but that the students in the game-system context were more motivated and engaged with the material.

The second article, "An HCI Approach to Computing in the Real World" by Sarita Yardi, Pamela Krolikowski, Taneshia Marshall, and Amy Bruckman, presents results from an HCI course taught in a quite different environment, a summer program for urban middle-school students. In their six-week course, modeled on a college-level HCI curriculum, the students applied five key HCI activities—requirements gathering, brainstorming, user needs, design, and iteration—to a "real" problem in their environment, the design of a touchscreen desktop that would replace their (physical) school desktops. A strong emphasis in the course was that these activities were the same as practiced by HCI professionals. Their evaluation looks at whether the students enjoyed working with HCI, whether they perceived it as realistic, and whether the experience affected their interest in taking further computing courses.

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