Ubiquitous *versus* One-to-One

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When we planned the editorial calendar with the topic ubiquitous computing, we were thinking of ubiquitous computing as the one-to-one ratio of computers to students and teachers and 24/7 access to electronic resources. At the time, we were aware that ubiquitous computing in the computer science field had more to do with wearable computers. Our thinking did extend to small handheld devices as one way to achieve one to one, but not to a many-to-one concept with seamless interfaces that allow for multiple collaborations from anywhere at any time. Our vision has been greatly expanded since our editorial calendar planning took place eight or nine months ago. The reporting from the one-to-one projects in this issue includes examples of collaborative work that take advantage of the wireless networked environment. In addition, Glen Bull and Bill Ferster focus on ubiquitous computing and discuss where the Web is headed with Web 2.0.

A key aspect in a ubiquitous environment is collaboration, as we know that learning is a social activity. A one desktop/laptop to each student environment can conjure up images of students working individually at their computers all day long. They can be e-mailing or instant messaging each other and the teacher, but real collaboration is hard to picture in this scenario. Students do need cave time with their own tools and ideas. They also need to grapple with concepts in a social context where they can hear and respond to the ideas of their fellow students and teachers as well as mentors, experts, and other collaborators in the outside world. Students use this interaction to correct misconceptions, sort out difficult concepts using electronic tools and resources, and grow in their understanding and learning. A seamless environment, supporting tools and processes appropriate for the learning task, is the goal rather than a prescribed number of devices per student.

Current research with millennials, or digital natives, highlights their preference for these types of social learning experiences. The tools that students use outside the classroom are important to use within the classroom.

It is interesting to me how our editorial thinking about what ubiquitous computing means mirrors how important it is to keep our eyes on the future and to be constantly thinking about how future developments can support what we know about learning. It feels as if technology continues to evolve at a faster and faster pace. It also seems that its direction is somewhat shaped by societal influences, such as a desire to collaborate and 24/7 access to our media and resources. We need to constantly evolve and expand our thinking to take advantage of new developments and shape future learning environments.

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