Looking into the future of e-learning is not easy. In such a quickly evolving industry, where can we find clues? In information technology, standards bodies frequently act as predictors of future trends. If we gaze into the crystal ball of the international e-learning standards community, what do we see?

**Learning objects take the lead**
The standards with the most industry traction right now are those that deal with metadata and with learning content assembly and delivery. Most vendors include these standards in their product designs, based on customer demand. Because these standards apply primarily to content, it might seem as though content is king. But don’t think of content in the traditional sense (self-contained courses).

According to the standards world, content consists of smaller, modularized learning objects that can either stand alone or be used as part of larger units of learning.

School or program or employees acquiring job-related skills, they are affected by administrative functions that require standards. For example, standards are needed in order for learners to access courses using a single log-on. They also allow learning and certification records to be recorded in a central human resource system.

Single log-ons already exist, as do standards that exchange enrollment data between learning systems and administrative systems.

However, the information needed for single log-ons and managing enrollments is small compared with the total amount of personal information that could be used or recorded in an e-learning context. Several of the proposed standards address this more general and more complete use of information, but none seem headed for overwhelming acceptance. The crystal ball indicates that portable transcripts and standardized adaptive learning may not become a reality as quickly as some would like.

Sharing skill and competency information among system components is of particular interest now. E-learning and human resource managers both need this tool, and vendors have recognized the potential of tying assessment and learning opportunities to staffing. This is a logical extension of the skill-gap analyses offered by learning management systems. A dialog is now occurring between the human resource and e-learning standards worlds, and the standards crystal ball shows the relatively new category of human capital management becoming increasingly important to the e-learning market.

**Technology integration for all**
Knowing how to represent data about content and people is essential, but standards also must address the nuts and bolts of integrating e-learning systems components. So far, the e-learning standards community has put little effort into solving this problem. That’s because system integration is not specific to e-learning, and early adopters tend to tolerate
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an ad hoc approach while the technology matures. Nonetheless, standardized methods of system integration and detailed implementation examples are needed to make real-world implementations less expensive and easier to use.

The good news is that current projects such as the Schools Interoperability Framework (www.sifinfo.org) and the Advanced Distributed Learning initiative (www.adlnet.org) deal with these practical integration issues, and groups such as the Open Knowledge Initiative (web.mit.edu/oki) and the IMS Global Learning Consortium (www.imsglobal.org) are moving in this direction. This shows that e-learning technology is maturing.

Hot issues for the future
There's a lot going on in the standards world that I haven't mentioned. Digital rights, quality assurance, learning design, accessibility, internationalization and localization, learning system architecture, and simulation are other hot issues. In the tradition of all crystal ball gazers, I will say only that e-learning is on a long and eventful journey. 

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