Is E-Learning E-ffective for IT Training?

You'd think so, wouldn't you? But an IT training firm bravely conducted its own research, with some surprising findings.

By Leslie Laine

With information technology workers already pushed to the limit by project deadlines and many interruptions every day, how can training managers provide IT people with the in-depth training they need to stay up-to-date on constantly changing technology? Asynchronous Internet-delivered training, or e-learning, is the obvious solution, right? A worker who can't carve out a few days to attend an offsite training event can at least set aside two to three hours a week in the comfort of his or her own office to pursue essential professional development, right?

Maybe not.

Most workers, even the phenomenally dedicated ones, may find it impossible to learn new technologies via a "convenient" e-learning product, even when that product is top-of-the-line quality. Before purchasing an e-learning package destined to gather dust on the virtual training room shelf, consider the findings of Learning Tree International, a worldwide IT training firm. For 28 years, Learning Tree has taken a hands-on, pragmatic approach to instructor-led, classroom IT training, continually evaluating and revising its courses to ensure that they focus on real-world skills. In fact, on the first day of any Learning Tree course, attendees are asked what specific applications they expect to be able to accomplish after the course. The instructor, a full-time IT professional working in the field he or she is teaching, makes the commitment to work hands-on with each participant during class to meet those expectations.

Eric Garen, co-founder and president of Learning Tree, says, "We're focused on the participants in our training and whether our training will be effective for them. Training directors or IT managers may buy packaged training and make it available to their IT staff, but if the training is unused or ineffective, it's a waste of money. More important, it's going to make companies less competitive as their under-trained IT staff fall behind. If we can find a way to deliver effective e-learning to IT professionals, then we'll develop and deliver it. But to us, *effective* doesn't mean theoretically effective; it means effective in

a practical way. It must be something that IT professionals will really use and that delivers sufficient practical skills for them to succeed in applying new technology."

Learning Tree's e-learning research includes surveys, focus groups, and tests of e-learning components, as well as full products and direct comparisons between e-learning and classroom courses. What is the primary conclusion from this in-depth effort? Asynchronous e-learning as a stand-alone training method doesn't appear to be effective in providing the amount of training required to teach most IT professionals to actually use new and complex technology.

High dropout rate

The problem with e-learning as a method for teaching a complex or lengthy subject is that most participants drop out of the training before they can accumulate enough knowledge and skills to use in a meaningful way what they learned.

Richard Beaumont, e-learning program manager at Learning Tree, says, "It appears that high-quality e-learning, even when it includes interactive features such as hands-on exercises, text-based peer interaction, and expert mentoring via email discussions and phone calls, just isn't effective at motivating most voluntary, self-paced IT professionals to move beyond a few hours of training. The transfer of significant knowledge and skills via e-learning is a significant challenge."

The e-learning development team at Learning Tree first discovered the problem of high participant dropout rate when it conducted a pilot test of a 25-hour, asynchronous e-learning course in early 2000. That pilot course, which incorporated the suggestions and reactions of participants in several earlier studies, provided the full e-learning equivalent of one of Learning Tree's most popular four-day classroom courses, Introduction to Networking and Data Communications. The pilot was led by an online instructor, or mentor, who was chosen from among the top-rated classroom instructors for the course, and required participants to work in groups to complete assignments and other activities by specific deadlines. Earlier research had suggested that this kind of team-based and paced model, rather than a self-paced model, would most likely keep participants engaged throughout the six weeks required to teach the material via e-learning.

Although the pilot model was paced in the sense that participants had deadlines, it was also asynchronous, allowing each participant the flexibility to access the material whenever and wherever it was convenient for him or her. Though all 60 participants who started the pilot gave positive reviews of the course content and delivery, most of them dropped out by the three-week halfway mark. In fact, only 30 percent of the original participants finished the pilot, despite ongoing email and phone messages from the instructor and course manager to encourage them to complete the course.

The high dropout rate was verified in late 2001, when the development team conducted a larger study involving the simultaneous beta tests of four e-learning programs, referred to as e-tracks. The e-tracks offered the equivalent content of four four-day and five-day courses: Introduction to Networking and Data Communications, Java Programming, XML Application Development, and Windows 2000. The e-tracks comprised a complete set of e-learning features, including an online registration system; the highest-rated Learning Tree instructors delivering short-duration lectures via recorded streaming video, with lecture slides annotated in real time; a team of mentors to respond to participant ques-

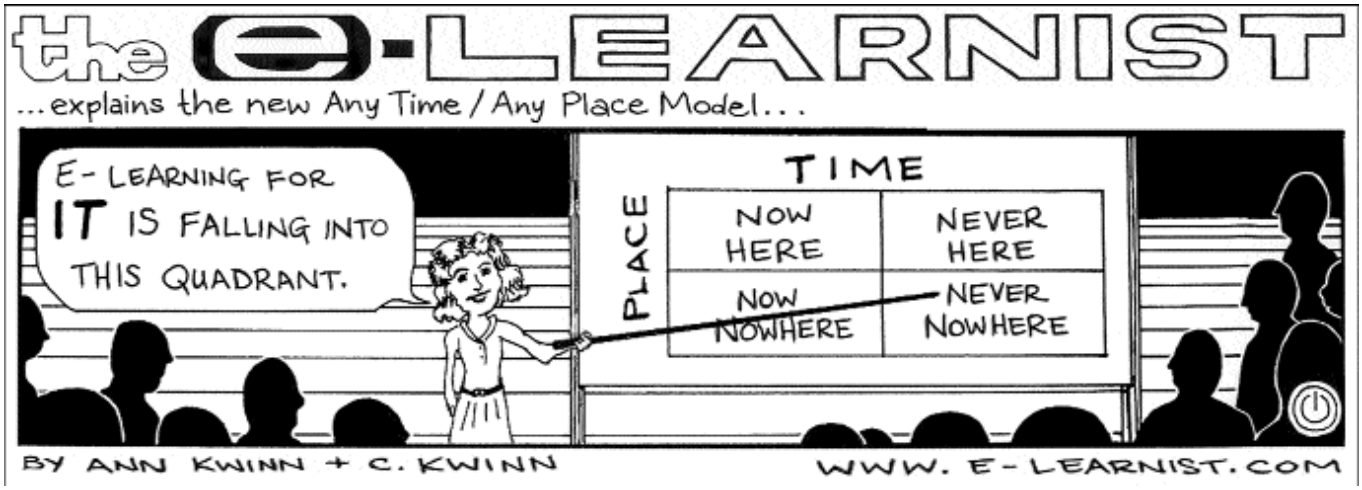


Illustration by Ann Kwinn and C. Kwinn

tions and assignments within 12 hours; and a patent-pending, remote hands-on exercise system that allowed participants to actually get their hands on the technologies they were learning.

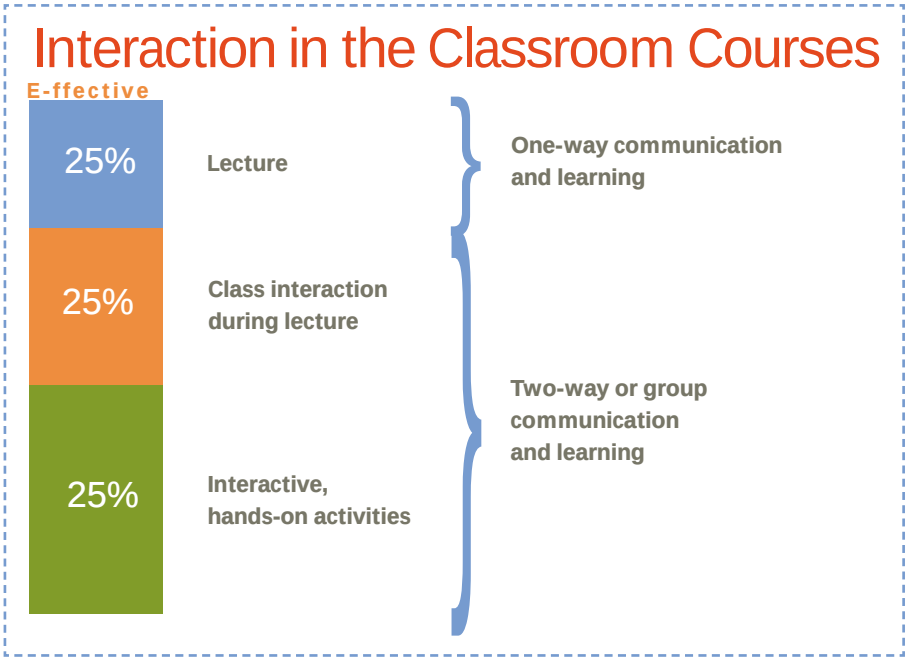
Each e-track, which averaged almost 25 hours long, was broken into seven or eight three-hour e-courses to make the material more manageable and allow participants to absorb the training in a nonlinear fashion if they chose. Participants from four of Learning Tree's larger corporate clients attended face-to-face orientation meetings, and each participant committed to finishing the courses and providing detailed feedback. They were given complete access to work through the material at their own pace over a period of up to 12 weeks.

Despite the incorporation of changes suggested by the earlier pilot study and a favorable response to the content by the participants, the dropout rate during beta tests was high; only 19 percent of the e-tracks undertaken were completed, for a dropout rate of a little more than 80 percent. Although the overall dropout rate was similar to that found during the prior pilot program, the organization of the e-tracks as sets of smaller e-courses helped the development team broaden its understanding of the dropout rate. In fact, when it analyzed the dropout rate for the individual three-hour e-courses, the results were almost the opposite of that for the 25-hour e-tracks. Of all of the three-hour e-courses started, 74 percent were completed. The high completion rate of the individual e-courses suggests that e-learning can be effective in engaging participants—for short duration. However, that didn't reassure the development team about the viability of using e-learning on its own for the in-depth technology training that Learning Tree specializes in delivering.

"The dropout rate increases as the duration of the training increases," says Garen. "Although 72 percent of those who started a 25-hour e-track completed their first three-hour e-course, only 52 percent completed six hours of e-learning, 28 percent completed 12 hours of training, and just 19 percent completed an entire e-track."

Garen continues: "To become effective in a new technology, IT professionals need at least four days of training (the equivalent of one e-track) to gain a critical mass of skills and knowledge. Anything less gives people an awareness of a new technology, but not the tools needed to actually apply it. It's like building a bridge just halfway across a river: You spend a lot of time and money but get no useful benefit. Therefore, if the goal is for IT professionals to gain sufficient skills to apply new technology in their projects, asynchronous e-learning will work for only about 20 percent of them."

Learning Tree wanted to learn more about *why* e-learning succeeded for less than 20 percent of participants What it learned provides useful insight for any company considering e-learning as part of its training.



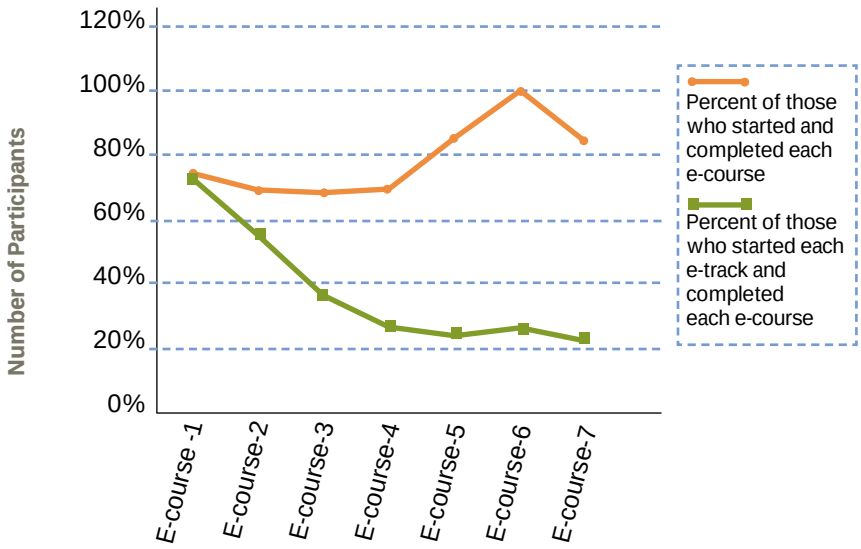
Typical Learning Tree classroom courses offer a large amount of interaction with the instructor and between peers. This strategy is the result of many years of feedback and experience in providing training that effectively prepares IT professionals to use new and complex technologies.

The quality indifference

Quality was one of the first suspects the development team investigated in its search for causes of the high dropout rate. In fact, much of the company's research efforts involved incorporating suggested improvements, as well as testing and retesting e-learning components and full e-learning products.

"We expected that the quality of participants' experience with the e-learning products would be a major factor in the success of the program," says Beaumont. "However, we discovered that even when training quality is reported to be very high, that isn't enough to motivate most

The Dropout Rate for E-Courses Compared With That of E-Tracks



When analyzed by e-track, the dropout rate for the beta tests was high, but when the rate was calculated for e-courses, the rate was nearly the opposite of that for e-tracks. E-courses, once begun, had a high (73.7%) completion rate.

e-learners to keep going beyond about six hours of e-learning."

One could say what was surprising about participants' reactions was the quality *in*difference that was found. The research results clearly indicate that high program quality eliminated that factor as a cause of the high e-track dropout rate.

Jam-packed, action-filled

Although the post-beta written evaluations and face-to-face debriefing sessions ruled out quality as a factor in the dropout rate, they did implicate another culprit: competition from the many distractions, interruptions, and conflicting priorities that are the norm for IT and most professionals. One participant said, "The quality was much better than I thought, but it still couldn't compete with my attention span." Most beta participants cited distractions, interruptions, and conflicting priorities as the main reasons they were unable to complete the lengthy training. That important finding was equally true for participants who had tried to complete most or all of the training at work and those who tried to complete it at home.

"Our lives today are jam-packed and action-filled," says Garen. "It's hard to devote sufficient time to this kind of training. It's the age-old conflict between the urgent and the important. This training is important, but the conflicts are urgent, and what's urgent generally gets the attention."

Beaumont notes that participants found it difficult to fit another obligation, especially a long-term one, into their already busy schedules, and that reduced their motivation to complete the training. "Many of our learners, even those who were highly motivated, reported more stress while taking self-paced training than they feel taking an equivalent classroom-based course," says Beaumont. "When the training was spread over multiple weeks, the ongoing pressure to get through it became a burden."

As an example, Beaumont cites what one participant told him during a post-beta debriefing session: "When you commit to e-learning over this length of time, you have a nagging sensation about having to get it done. It's more pressure and stress…so there's a…negative feeling about the training even though you know you should just do it."

Comparison shoppers

The development team had a chance to further test the degree to which competition from the obligations of work and home were to blame for the dropout rate when they invited all 61 beta testers to take any Learning Tree course and compare their classroom and e-learning experiences. Nearly 20 percent of the group accepted. After finishing their classroom courses, they rated the importance of a variety of factors, including distractions and interruptions, affecting whether the classroom training was successful. That comparison test revealed that distractions and interruptions were not the most important reason classroom training was more effective than e-learning.

Most of the beta participants who compared the e-learning model with a classroom course preferred the classroom experience. In fact, the eight out of 11 participants who preferred the classroom indicated that their preference was "very strong." On a scale ranging from 0 (worst) to 4 (best), this group gave the classroom experience an average score of

3.75 and the e-learning experience a score of only 1.63. That e-learning score plummeted from the 2.98 rating of the e-courses by the same eight participants immediately after their e-learning program, but before taking the classroom course. In contrast, the three participants who preferred e-learning after taking classroom training indicated only a mild preference for e-learning, giving the classroom experience an average rating of 3 and the e-learning experience a 4.

The participants in that direct comparison between e-learning and classroom training cited these top benefits of classroom training:

- interaction with the instructor
- engaging or stimulating nature of the experience
- interaction with other participants.

The comparison shoppers ranked freedom from interruptions and distractions as fourth in important benefits of classroom training.

According to Garen, that finding is supported by the feedback Learning Tree has received since its inception about the importance of interaction in classroom courses. "In the classroom," he says, "there are questions of clarification, but typically those are only a small percentage. The more important questions are about application, in which participants ask how to apply what they just learned to their projects, or questions of relationship, in which participants make connections between several related concepts they just learned. When you answer those types of questions is when you see…the aha! expression."

In prior findings, the development team noticed that when instructors presented e-content identical to that of classroom lectures, it took half as long to deliver the same material. "We hadn't expected the e-learning lectures to be so much shorter than the classroom lectures," says Garen. "The difference is that interaction time in the classroom doubles the duration of such 'lecture' sessions."

Because half of classroom time is typically used for interactive hands-on exercises and half of the remaining lecture time is used for interactive discussion, about 75 percent of the total classroom time is accounted for by interaction between the instructor and participants. "That might explain the often-made claim that computer-based training and other recorded forms of learning are faster than live instruction. The recorded training just reduces the interaction," concludes Garen.

The findings of the comparison between Learning Tree e-learning and classroom training show that faster is definitely not always better. "It's our experience that it's in the interaction that the real learning takes place," says Garen. "It's in the interaction that participants can explore and get advice from other participants and the instructors. That's borne out by what participants reported in this study, as well as by what we know from training more than 1.3 million IT professionals and managers. The degree of interaction is the key to the real learning of practical skills."

Going forward

After two years of research, the e-learning development group has come to several interim conclusions about the efficacy of using e-learning to provide in-depth IT training. Considering the research findings as a whole, only a small fraction of IT professionals, perhaps because of their individual learning styles or habits, find e-learning to be a viable training solution. But for now, it appears that using e-learning for in-depth IT training requires an adjustment that most IT professionals aren't willing or able to make.

Illustration by Ann Kwinn and C. Kwinn

Beaumont says the findings have important implications for training managers. "The real cost of transferring a significant amount of IT knowledge and skills via subscription-based, self-paced e-learning programs may be higher than many organizations expect," he says. "Purchasers should be sure to analyze how often IT workers are actually accessing and completing the training materials. The lack of use in an IT environment may come as a surprise, especially when workplace distractions and learners' motivation aren't addressed. Even worse than that hidden cost is the more hidden cost of having IT professionals who are inadequately trained for the projects they're working on. Inadequate training is among the primary reasons that IT projects are finished late or over budget, or that just don't succeed."

For Learning Tree, asynchronous e-learning as a stand-alone method of in-depth IT training hasn't proven effective enough. The dropout rate during an e-learning program that's long enough to train someone to actually use new technology is far too high, even when the quality of the e-learning program is superior.

Says Garen, "We're continuing to explore other forms of e-learning delivery, especially focusing on finding ways to use e-learning in support of our classroom courses. For example, short online seminars before or after an ILT course, post-course online mentoring, and post-course Internet access to hands-on activities are all possible uses for e-learning in support of classroom training. But until we can find an educational model that results in the vast majority of participants successfully completing enough training to achieve their educational objectives, Learning Tree plans to stay the course with successful instructor-led IT." TD

Leslie Laine *is a freelance writer specializing in technology issues.*