The

By Jonathon Levy

In 2001, Harvard Business School and Stanford University created a working model of a futuristic advanced learning system that enabled them to research the desirability of several visionary concepts with chief learning officers and top HR executives. The idea was that if a picture is worth 1000 words, then a working model is worth 100,000. The model helped everyone to start from an identical vision and underlying assumptions, and to provide meaningful feedback about the future of corporate and professional learning. The picture that emerged was one of a sustainable model of knowledge transfer with new metrics, performance-based ROI, and a capacity to embed not just knowledge, but also corporate vision and strategy in a next-generation system. This article is based on that model.

The doctor's usually busy, and this day was no exception. Too many patients, too little time. This morning, he'd "sit in" on a Grand Round, a lecture from an esteemed colleague in his field, via the Internet. He'd attend virtually while having breakfast at home. At least, that was the plan. The state requires all physicians to continually update their knowledge and skills by taking hundreds of hours of education each year. The state doesn't say how the doctors are supposed to find the time to do that while tending to patients and the myriad administrative tasks required of the 21st-century medical practitioner.

The toast popped, the doctor poured his coffee, all the while listening to his overnight voicemail messages, his cell phone held to his ear with his shoulder to keep both hands free for the coffee and toast.

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Busy professionals—call them **"knowledge warriors"**—have no time for courses, no need for grades. They learn in **new ways,** through new technologies, on the go. **Here's how.**

Knowledge Warriors

The PC had already started up and was requesting his password, blinking patiently on the counter. He snapped the TV to "Headline News" as he sat down at the counter. Before he could swallow his first sip of coffee, his email message headers appeared on the screen, auto-sorted by importance. He'd get to those later. But before he could click through to the Grand Round, a red flashing box above the messages caught his eye: ALERT!! Patient update (new data).

He clicked on the box, and the screen immediately opened to a summary of a new study just accepted for publication in a refereed journal in Europe and entered into the medical update database overnight. Two lines said that patients taking a certain drug who also had diabetes were found to be at risk for previously unforeseen complications. Just under the summary was an option to drill down for more details and a header that read: "You have been pushed this update because one or more of your patients may be at risk." Under that was a list of his current patients who were taking the drug and who also had diabetes. Under that was a list of action options.

The doctor hit the Consult button, and a list of names of specialists in the selected field appeared. He chose a name he knew, a person who would help him decide whether to keep the patients on that medication. A list of mutually available times for a meeting appeared, and he selected one. He then clicked on Patient Services and wrote, "Schedule each patient for a reevaluation." When he hit Return, an email message was auto-generated to Patient Services along with the information he'd just seen and the list of patients attached. Patient Services would contact the patients to pass on the new information and ask them to contact the services. Those patients with email would automatically receive the updated information.

Then the screen disappeared, and the Continuing Medical Education request screen replaced it. The doctor drilled down through the taxonomy to his subspecialty and typed in the name of a new procedure he'd heard of recently, and a list of learning opportunities appeared. He found one that was 10 minutes long and sat back to finish his toast and coffee as the video, text slides, and still images filled the screen. He answered a few interactive questions at the end, and the system automatically logged his participation in the session, which would count towards his CME licensure requirements.

Several minutes later, the doctor was pulling out of his driveway on the way to the hospital. Over breakfast, he had prevented three of his patients from suffering a previously unreported complication, and he'd learned about a new procedure that might save hundreds more. "A good start to the day," he thought as he pulled onto the Interstate.

He is a knowledge warrior.

"I'm in trouble," the IT professional thought as she left the VP's office. Her boss was nice about handing her this unexpected assignment at the last minute, but in the end the only thing that would matter is how well she did.

A negotiation with an important software supplier was two days away. She'd written a briefing paper for her manager outlining the technology issues. She knew those well, no sweat. But her boss was called out of town and she'd be at the table in his place, negotiating on behalf of her company. Though she knew the technology well, she didn't know anything about negotiation.

Back at her desk, she clicked on Preferences and her company's Knowledge Map, and the competency taxonomy immediately appeared. She selected Negotiation, and instantly her personal profile was updated. When she closed the selection screen, new learning content on negotiation was already in the well—the portion of her screen where active documents appear. Next, she searched "negotiation" and selected 5-Minute Options. She selected each link based on what she already knew and what would lead to highly targeted modules lasting no more than five minutes.

As she browsed through the initial selections, she drilled down on some and rejected others. The underlying learning engine made changes in her profile reflecting her choices, fine-tuning the scope of her knowledge needs. Within a few minutes, new selections were pushed to her desktop, targeted more to her specific objectives. Of the tens of thousands of learning objects available on the general subject of negotiation, powerful personal knowledge filters in the background provided exactly what she needed.

Thirty minutes later, her phone rang. It was a friend wanting to confirm their lunch date. "Give me a couple of minutes," she replied. There remained one important, unfinished bit of business. She clicked on the Collaborate button and selected Mentors. A list of in-house experts appeared, sorted according to the same competency taxonomy that had earlier presented digital content. Under Negotiation, she clicked on the first name and sent a brief message asking for an afternoon phone conference to help her prepare for the negotiation. Before she hit the Send button, she clicked on the Privacy button and selected the Share My Knowledge Map option so that her new mentor could see what she'd already examined. By the

time they spoke that afternoon, her new temporary mentor would understand her task, her background, and which learning materials she'd already seen.

She logged off and headed for lunch feeling more confident than she had 45 minutes earlier.

She is a knowledge warrior.

Assume a difference

What those scenarios have in common is a new way of presenting knowledge and information to busy professionals—an approach that has nothing to do with the old academic model of courses and grades and everything to do with a new system of knowledge management that supports knowledge workers' individual needs.

This new approach relies on a powerful partnership that links robust search engines, personal profile filters, a knowledge map or taxonomy, indices to databases, and inference and collaborative technologies together with a constantly changing profile of the existing knowledge of the worker. Instead of assembling disparate learners in the same room at a common time and force-feeding information as though each had identical prior knowledge, learning styles and knowledge needs, this new system of learning starts with the premise that everyone has different prior knowledge, different learning needs, and a different context for knowledge. Optimal learning—high-performance learning—flows from a personalized solution in a customized environment.

The sustainable model of e-learning for corporations isn't a linear extension of the previous phase. Like all revolutionary changes, new technologies—properly deployed—render the previous model obsolete. These are, in the words of Clayton Christensen, "disruptive" technologies. The old model is left behind in favor of a newer one that works far better. The sustainable model of online learning requires recentering our attention on the consumer of knowledge, on the individual learner or so-called knowledge worker. Content becomes content only when someone is using it. It has no abstract value while just sitting in a repository or on a learning management system. A winning model will focus on personalized, employee-driven learning that helps knowledge workers decrease time to performance and increase productivity. The new model turns the controls over to the learner. Grades and other learning metrics of the past have little value in a contemporary business environment.

Taken collectively, the time of the learners is more important and less available than the time of the subject matter expert. Rather than building a structure around the provider, the new paradigm builds a support system around the learner. It's a shift in focus, a shift in emphasis, but it is a shift that's sufficient to turn the entire enterprise learning and training field upside down and to reset everything we've done in the past to zero.

A Gutenberg Moment

The use of technology in learning has gone through several distinct phases, but all of them are derived from the same basic academic model. There has been marginal growth and evolution—from one-way video (satellite, broadcast) to interactive live instruction, from CBT to interactive e-learning and blended learning.

All of those models share the same root progenitor: the traditional academic archetype wherein the lesson is determined by the faculty. As the examples of the doctor and the IT professional suggest, a sustainable model provides the needed content dynamically assembled on demand from a rich pool of available content types, as and when needed.

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Sometimes, highly targeted content is pushed to the knowledge worker, triggered by a combination of interconnected databases that track every mouse click. That model favors quality over quantity; very smart filtering is critical to its success.

At the core of the new performance support system is a taxonomy or competency map that organizes changing job requirements and small chunks of content, as well as pointers to knowledgeable people (such as mentors and groups), into the same nomenclature, dynamically creating solutions on the fly for every user. Such a system is highly personalized based on each user's current needs and activities and customized to reflect the language and culture of users' respective enterprise.

In the United States and Europe, online learning has so far been seen largely as an alternative means of training a knowledge workforce. Some companies and content providers take that model a step further, attempting to provide online solutions within the context of immediate needs or problems. But the opportunity exists to drive the model further still. Human and digital content from sources inside the enterprise can be captured, meta-tagged, and blended with outside content in real time, providing just what's needed, when it's needed, to just those who need it. No courses, no classes, no separate learning experience. Instead, learning becomes an inseparable part of working, of doing one's job.

The power of the new performance support technologies is just beginning to be understood. As the sustainable model evolves, the traditional academic genre is being replaced with just-in-time learning that doesn't require the learner to leave the workplace or even to divert attention from his or her task at hand. Today and in the foreseeable future, context trumps content. A new and powerful just-in-time performance support model promises to increase productivity by several orders of magnitude—by linking learning context to business performance.

These days, the state of online learning in most of the world can be summed up as invention without the value of innovation—similar in many ways to the Incunabula, the first bibles produced by Gutenberg. These first printed objects were a hybrid. The words were printed by Gutenberg's new invention, then the bibles were handed off to monks for hand illustration. That new technology was a big improvement over hand lettering, but the scaleable value of the innovation hadn't yet been released. Even a small remnant of the old model—hand illustrations—was enough to obscure the true value of the invention. Productivity increased marginally, but the true potential of the invention was bottlenecked, and only a small percentage of the value of the printing press was available.

When the last constraint was removed and illustrations were done from plates rather than by hand, the printing press became truly scaleable, increasing its value by many orders of magnitude. In current parlance, the hockey stick went vertical, the invention became viral, but only when the old paradigm was fully surrendered. Only then was the innovation within the invention liberated, and a new unbounded world of literacy emerged.

No new technology was required. The same invention was used, but people began to think about it differently. In that way, performance support delivered online and assembled by a user can be the hidden innovation lurking within the e-learning invention. Here's a new way to present knowledge and information to busy professionals—a way that has nothing to do with the old academic

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model of courses and grades and everything to do with a new system of knowledge management that supports knowledge workers' individual needs. It transcends the traditional model. Instead of requiring knowledge workers to come to classrooms (physical or virtual), it brings the knowledge to them, giving empowerment to the new knowledge warriors.

The new model enables individuals and organizations to benefit from the intelligence and knowledge that is already available from each knowledge worker, allowing all to begin a search for new knowledge from where they are. Researchers have found that we spend a high percentage of our time—some estimate it at 28 percent—just seeking the information we need to do our jobs.

What knowledge workers need isn't just a way to access data, but to filter it so the information they receive is exactly the information they require, when they need it. Collaborative filtering and smart push (such as the information the doctor received in the Alert email message) not only creates efficiency, but also creates entirely new and unanticipated streams of productivity.

This shift marks the beginning of a new age in learning and knowledge management—an age that can attain an increase in learning productivity that could parallel the productivity increase of the industrial revolution over cottage industries.

The entire field of learning is standing at the door of a Gutenberg Moment. TD

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