

# The Just-in-Time Imperative

The imperative—and the problems.

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- In This Article: JIT**
- Just-in-time learning is being driven by the business competitive environment.
  - JIT learning is closely associated with informal, learner-driven knowledge acquisition and use, and not with formal courses.
  - Key elements are anticipatory knowledge requirements and capture, knowledge structuring and restructuring, intellectual capital for learning, collaborative learning, modularization, communities of practice, and learning counselors.
  - Key technologies include databases, Internet-intranets, portals, and content management systems.
  - Significant issues remain regarding reflection, quality, standards, measurements, the roles of learners and educators, performance support, and the social component.
  - The changes in the role of many HRD professionals will be dramatic as they move from training development and delivery to knowledge structuring and learning facilitation and support.

In June 2001, 64 HRD professionals and scholars, as well as business leaders, gathered in Orlando, Florida, at a Future Search Conference, held during the ASTD International Conference and Exposition, to explore the future of HRD. These three trends dominated:

1. Increasing effects of globalization and diversity in the workplace.
2. Increasing demand for just-in-time learning.
3. Increasing shareholder pressure for short-term profits.

**T**his article addresses trend number 2. Former GE CEO Jack Welch noted the imperative, “Know that the ultimate, sustainable competitive advantage lies in the ability to learn, to transfer that learning across components, and to act on it quickly.... The opportunities open and close weekly, even daily.... The need for more speed has driven our management team for two decades.”

HRD leaders have noted the imperative, “The course development cycle is just too long and isn’t responsive to the need to make people competent quickly” (“And Now, On-Demand Learning,” *Training*, May 1990).

So, if the need for just-in-time learning has become clearer and more urgent, why has the response of workplace educators been hazy and slow? How many articles have we read about the business environment that highlight the fast pace of change, need for speed and competitiveness, and increasing time and cost constraints? How many times have we pointed to adult learning principles that assert that grownups “as a rule...like their learning activities to be problem centered and to be meaningful in their life situation, and they want the learning outcomes to have some immediacy of application” (*Understanding and Facilitating Adult Learning*, Brookfield, 1986)?

Perhaps the last straw is what we’ve discovered about how people really learn to do their jobs. As far back as 1984, ASTD informed us that more than 80 percent of what people learn is through informal means, less than 20 percent through formal instruction on which workplace educators spend so much time and money. That’s confirmed by recent research by the Education Development Center, indicating that 70 to 80 percent of learning occurs informally through processes that aren’t structured or sponsored by the organization. Such learning generally takes

place as employees perform their daily work-related activities. Learning is primarily the result of experience, collaboration, observation, and reading.

We’ve heard numerous reasons for our limited response: scarcity of resources, insufficient infrastructure, conflicting standards, inability to apply sound instructional design, lack of control over the learning process, and lack of measurability. Brief reflection on those reasons would lead most of us to the conclusion that they’re either unsound or far from insurmountable. Surely, we’ve also heard about numerous examples of just-in-time learning approaches and applications that have worked quite well.

The training and development processes that we’ve canonized and honed over time—under the umbrella of instructional systems design—are our prized children. But it appears that as the children have grown older, we haven’t allowed them to mature and diversify beyond the strictures we imposed on them in their early years. ISD, as we know it, is still relevant and continues to be the most logical response to many learning needs. But helping workers learn just-in-time requires nurturing more responsive and innovative behaviors. If we don’t bring those behaviors to bear, we risk marginalizing our organizations’ drive to compete. The shift has been from product to knowledge.

### Expanding our views

Nurturing more responsive and innovative behaviors in the time-to-market knowledge cycle requires changing the way we execute our requirements, design, development, and delivery.

To gather requirements, we generally turn to our organizations’ management teams after they solidify their plans. Then we help them determine where gaps exist in the knowledge and skills needed to implement those plans, and we begin to design and develop a learning or performance improvement response. But

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that process is often tardy in the current business environment. To compete, we need to turn to *anticipatory knowledge requirements and capture*. That term means that workplace educators need to be aligned with the market watchers and strategic planners in their organizations—identifying emerging and needed ideas, trends, methods, and technologies. What we discover, and subsequently capture, becomes the raw material for learning. The risk is that we will spend resources to capture what's not applicable or appropriate; the reward is that we'll be ahead of the curve with the knowledge we choose to apply. For most organizations, the risk-reward balance has shifted in favor of taking such risk.

Once we capture the raw knowledge, we often can't afford the time and cost to put it through a traditional design and development process that leads to instructionally sound courses. In more cases than not, the raw material may be structured only to the extent that it's palatable to the audience who needs it and is then made available. Speed is the key factor. The objective is to identify the right knowledge, structure it enough for learning, inventory it to make it accessible, and evaluate the learning to see whether the knowledge requires more structure. If so, a restructuring process takes place that adds instructional rigor. It's our responsibility to continually balance the need for speed and instructional rigor, and to hone the process of knowledge structuring and restructuring.

That expanded view of design and development affects the way we look at delivery processes and methods, and widens the spectrum of the learning activities we facilitate to include informal ones. Here's where we see an overlap with the burgeoning discipline of knowledge management, which has focused on the reuse of an organization's intellectual capital. We need to annex the use of intellectual capital for learning, perhaps recording it in more learnable formats such as stories. Further, we need to accentuate knowledge sharing, or what we know as informal collaborative learning. Employees tell us again and again that a good deal of their learning takes place through dialogue with the right person, at the right time. However, the process for doing that is inefficient, especially in our mobile environment. Our job includes connecting employees having "knowledge problems" with the appropriate experts for quick knowledge sharing through the most-efficient electronic vehicles. Such vehicles also permit learning meetings, through which experts, with the guidance of educators, can convey their knowledge quickly to groups of employees. Such meetings can be recorded for future access or restructured for use in other learning activities.

When more-formal learning activities are warranted, JIT requirements demand modularization and personalization. Many courses take too long to develop and deliver, or much of the knowledge con-


veyed by those courses is already known by learners or is irrelevant to them. Consequently, we're charged with providing just the education employees need in modules, with discrete learning objectives. Each module can be used independently, linked to form personalized courses, or reused in other learning activities. The modules can also be developed on a priority basis so that the most-important ones can be released to the target audience as early as possible, with the other modules following as needed.

We have been talking about learning modules or objects since at least the 1980s, and the need has only increased. Modularization is essential for responding to the JIT imperative, and the technology is available.

### Using the technology

The technologies that support JIT processes are primarily databases, Internet-intranets, portals, and content management systems.

**Databases** facilitate the cataloguing and accessing of reference material critical to the organization and its employees. Rather than having to wait to get needed information from a course or looking through course material, books, or similar resources to solve problems, learners can search databases by entering keywords that lead to pertinent material they can make use of at the moment they need it.

**Internet-intranets** have revolutionized the way we seek answers and access material and expertise. Consider the example of WebMD  [www.webmd.com](http://www.webmd.com). Using that site (and others like it), people with pressing medical questions can access the advice of professionals in a just-in-time manner rather than wait hours, days, or weeks to see a physician.

**Portals** provide a customized window through which learners can more efficiently access the knowledge they seek.

**Content management systems** enable chunking and tracking of structured knowledge into small objects. A traditional program might cover a broad area of focus with multiple sub-components, but content management systems can help break apart, organize, and offer the content in logical units. Learners select the units and modules, applicable to the need at hand.

For example, IBM Global Services has taken the JIT imperative to heart in its learning strategy by implementing a series of prototypes. In recognition that Linux is becoming more integral to its business

strategies, IBM captured knowledge about the software and its use from subject matter experts and structured that knowledge onto virtual reference cards. The cards are categorized into Overview, More Detail, and All the Details—making it easy to choose the needed path through the material. Included are various resources such as a list of SMEs, useful links, a glossary, technical resources, and a quick skills guide for developers. Subsequently, the captured knowledge was restructured for Web presentations on IBM Learning Services's Online Presentation System. What used to require three days in a classroom for e-business consultants now requires just enough time, at the right time, on the Web. Practitioners access a Website that lets them take just the training they need, or access just-in-time information or case studies from which the training was built. They can also collaborate to gain knowledge that's more specific to their situations. That knowledge system lets them gauge the breadth and depth of knowledge they require in order to do their jobs.

# A

number of learning meetings structured by SMEs and educators were developed in a week or two, using IBM Learning Services's Virtual Event Services. Typically, several meetings were held to convey a new methodology. The remainder, and more peripheral, audience of thousands viewed segments of the recorded meeting, as needed, through Webcasts.

In addition, various experiments, using different technologies, were conducted with modularized courses to judge the effectiveness of employees accessing just the modules they needed, when they needed them. In each case, the learners responded positively; less than satisfactory results were because of poor instructional design.

The Center for Creative Leadership, in partnership with PBS The Business and Technology Network, created *Leadership Excellence: Avoiding Derailment* as a real-time performance support system based on the center's research on the leadership factors fundamental to success. Using the LEAD system, learners are able to access role plays, tips, tools, highlights, in-depth skill development sites, and interactive notebook activities about questions relevant to their daily lives. Learners can get the

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information in a variety of ways, depending on the learning mode. For example, people can use a self-assessment to guide them to the sections relevant to their specific areas needing improvement. They can also choose to progress linearly through the system. Using the search tool, they can identify questions they have and are directed to the sections relevant to their particular needs.

In some ways, action learning processes can be designed to become just-in-time learning methodologies. With regard to specific organizational issues, learners gain deeper knowledge while working on a particular project, aided by skilled facilitators and organizational sponsors who answer critical questions at the moment they arise. Though action learning can be less just-in-time, its embedded nature lends it to a JIT need if properly designed.

At Memorial Sloan-Kettering Cancer Center, Nancy Keane and her team developed a set of simulation tools that were integrated with the implementation of several enterprise-wide clinical support systems: order management, electronic medical records, picture archival and communication, and disease management. That was a result of the demand for making new information readily available and instantly applicable for doctors, nurses, clinicians, and other hospital staff.

Xerox developed tools for its service technicians for sharing information worldwide. Researchers at its Palo Alto Research Center shadowed technicians in the field to build a system of best-practice information, based on the experience of service technicians, their work processes, and which knowledge

was most valuable. Using that knowledge sharing system, Xerox has estimated cost savings at more than US\$25 million a year.

AT&T Broadband's Network Operations Center has adopted the concept of moving from providing training to facilitating learning. Using a learning management system and dynamic learning objects (small chunks of course content), it built an efficient system to improve individual learning and performance. That resulted in creating customized course work targeted to eliminate individual gaps in learning that also reduce the course development cycle. The system also provides managers and supervisors with an effective tool for coaching employees.

#### Facilitating learning communities

Perhaps the most important organizational construct to emerge that can support the kinds of informal learning processes we've described is communities of practice. Composed of people with similar work purposes or interests, these communities can find or create the knowledge they need, select the right means to structure and exchange that knowledge, and assess knowledge gain and application. Belonging to a community of practice helps focus employee learning on what's most productive for the business and individuals, and motivates knowledge contribution and exchange. It also responds to people's need for affiliation, often lost in the mobile environment.

To fulfill their purpose, communities of practice require strong leadership, knowledge management, and learning facilitation. Needed to provide the facilitation are educators who act as learning counselors, a title coined by Darren Short and Rose Opengart in “It’s a Free Agent World” (*T+D*, September 2000). The educators should spend less time focusing on traditional training and more time ensuring that the community and its members are traveling the right learning paths and have the appropriate resources.

The learning counselors’ tasks might include

- determining what the community needs to know in common
- helping individual members determine what each needs to learn for business and developmental purposes
- determining the most-efficient means for the learning
- arranging learning activities and working with SMEs to develop and deliver the activities
- measuring the impact of learning and reporting the results
- providing learning tool-and-technology requirements
- building and maintaining relationships with organizations that provide useful learning materials for the community
- participating in a community of learning counselors.

Are we saying that JIT learning will take over the training and development world, pushing formal learning out of the market? No. But we are saying that a reasonable balance can be found, in a way that allows each method to be used to its fullest value without trying to make it be something it can’t be. That’s easier said than done, of course, and significant issues need to be resolved. Here are a few.

**The need for reflection.** Often, formal, non-JIT learning forms the foundation of a learning process, allowing learners to reflect and practice in a safe setting. To avoid losing that important learning element, we need to retain some formal learning activities and help practitioners become more-intentional learners. They will require an increased ability to reflect in the midst of action, in the midst of JIT.

**Quality.** This is an area of some disagreement. Does quality have to be sacrificed in order to meet the need for speed? Yes and no. Yes, in that sacrifices may be made in learning effectiveness or knowledge veracity to ensure competitiveness, usefulness, and pertinence of the knowledge and skills. No, in that the tradeoffs mustn’t be so great that learners are misinformed or ill equipped. Making such tradeoffs complicates the work of the educator or learning counselor, but the ability to make tradeoffs competently is critical to the success of JIT learning and to reaping its benefits.

**Standards.** JIT learning methods often rely on technologies that aren’t yet standardized. We don’t, however, need to look at the movement to JIT learning methods as an all-or-nothing initiative. Eventually, when we expect to reap the benefits of cross-organizational databases and content management and collaboration systems, the standards will be necessary. In the meantime, as we offer bodies of knowledge to targeted communities of employees, we can invest in JIT techniques that provide immediate and satisfactory return.

**Measurement.** It’s one thing to wonder how to evaluate learning that’s accomplished in traditional classroom settings. We can often evaluate whether the immediate learning objectives have been met, given our relative control of the situation. It’s another challenge to capture the impact of learning that happens in an emergent and sometimes collaborative manner. Just as the field must continue to challenge itself to determine the best ways to evaluate the impact of traditional learning, so must we invest in understanding how to evaluate JIT learning and its outcomes.

**The role of learners.** From a role perspective, what’s different about JIT learning is that control shifts to the side of learners. If they aren’t motivated or able to learn, they won’t access the materials or participate in the activities. The learners create their own learning environment, select their own vehicles, establish their own pace, and set their own expectations for outcomes. That’s not to say that such learning occurs in isolation of other, more-formal processes; it can certainly be a component of a more structured learning process for an individual or a group. But for the most part, educators provide an array of opportunities and assistance and learners use those of their choosing. Unfortunately, many learners don’t have the motivation and skills to learn

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in a self-directed, informal manner. But that is a key, competitive competency for the 21<sup>st</sup> century. What is our responsibility to develop it?

**The role of educators.** We have a substantial investment in a cadre of training developers and deliverers. How do we shift a substantial number of them to learning-facilitation roles to support business units from inside their organizations? Such a transformation is far from trivial, but perhaps not as difficult as we might assume. The skills of many workplace educators are akin to the skills needed to capture and organize knowledge for learning purposes, help individuals and groups select the best ways to learn, and facilitate learning on a broader scale.

**Performance support.** For many years, our field has assumed that learning is one of a number of important interventions that improve human performance. When we emphasize the need for JIT learning, we also must recognize that other performance supports can be more appropriate. Why have someone learn a task when a job aid is more efficient and effective? So again, we add complexity to the educators' or counselors' new world. They must be sure to weigh the performance intervention alternatives for the communities they serve.

**The social component.** Even with the elements of communities and counselors, can we maintain a human touch when learning is through electronic vehicles? Learners are humans, after all, and most humans learn best when able to interact with others fully. When do we need to complement JIT methods with face-to-face ones? Only questions here,


few answers.

The challenges are imposing, no doubt, but the field must act now to respond to the need for JIT learning. We must push the edge through rapid prototyping, continuous improvement, and the embrace of change. We must continually make improvements in requirements, development, delivery, support, measurement, and evaluation—in their expanded forms.

JIT learning is a major requirement and challenge for our field. If we don't meet that challenge, business leaders will tend to marginalize our work, because they're the ones stoking the engines to speed up the trains, to travel along new tracks. The functions in their organizations that don't help provide the fuel might as well reside in the caboose. Come to think of it, we don't see many cabooses these days. TD

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for a summary of the conference and photos. Also,  [www.futuresearch.net](http://www.futuresearch.net) to learn more about this method for helping people act together across boundaries of geography, language, culture, class, gender, race, and age.