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About Michael Allen's 2009 e-Learning Annual:

Alarming. Disquieting. Insightful. Constructive. Brazen. No rehash of the same old principles and perspectives here. Michael Allen's Annuals probe and question common practices in search of solid guidance for success with e-learning, and this edition is no exception!

As organizations universally turn to e-learning to reduce costs and meet their learning and performance needs, they make many regrettable mistakes—mistakes that can be avoided but rarely are because common sense leads to them. The 2009 Annual once again provides an important collection of the most current insights and best practices that will help both educators and workplace learning leaders create, purchase, and apply quality e-learning programs more effectively. It provides a wealth of applicable examples and guidance for all persons contemplating e-learning, from the student to the professional. It frankly and objectively presents lessons learned and the critical steps to success.

Authors include Jay Cross, Karl Kapp, Lance Dublin, Ruth Clark, Bob Mosher, Betty Collis, and more.

While accurate for content, the formatting of the text and images of this chapter has minor revisions, and is paginated slightly differently than in the book.

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POPULATING THE LEARNSCAPE: E-LEARNING AS STRATEGY

Clark Quinn

While adaptation and change are necessary for continued success, neither organizations nor individuals find them easy. Information, communication, and learning technologies offer assistance, although no single solution fits all organizations or all individuals. Author Clark Quinn explores e-learning, information portals, and e-communities in a quest for a coherent understanding of the options and a schema for effective deployment.

How do organizations cope with increasing change? One approach to consider is leveraging the capabilities of information technology such as e-learning, portals, and sometimes e-communities. These initiatives typically have remained tactical and have not been integrated into a coherent strategy. However, there is a broader picture that pulls together the individual tactics and weaves them into a coherent whole.

In this article, I explore the corporate use of technology for talent development and rethink it. I integrate a series of systematic tactics that broaden the reach and depth of technology solutions to organizational learning and performance needs. Finally, I tie the resulting structure back into to the organizational context.

The goal is to provide a systematic and overarching framework to guide organizational e-learning strategy. First, however, let's review the current context.

WHAT THE CXO WORRIES ABOUT

The problems facing today's organizations are well known: decreasing resources, increasing time pressures, information overload, and ever-more-agile competition.   Similarly, the necessary ingredients are also known: increasing knowledge capture and sharing, better problem -solving, more creativity, and innovation.   People need information, knowledge, and skills, but they need more than just content; they also need interactive support, communication, and more.

Note that most of these needs have little to do with training, although they have a lot to do with learning and performance. An organization's knowledge, learning, and performance needs are for far more than just courses. They comprise what Jay Cross (2007) has called the *learnscape*. Marc Rosenberg (2006) made the point eloquently in his book *Beyond e-Learning*, identifying the role knowledge management, performance support, and collaboration play in the organizational milieu. There's more, however, including mobile, single-sourcing, and other new developments.

When we take a larger organizational picture and focus in on *all* the learning and information needs, we recognize that more than training is needed. Our response must meet the needs of practitioners and experts, as well as novices. It must address the needs of line, management, and executive development. The response needs to consider the breadth of contexts in which employees perform, including at desks, on the phone, in meetings, at client sites, and more. Further, the response needs to consider the full suite of technologies available and not just networked computer screens, but phones, media players, and personal digital assistants. The response also needs to consider the full suite of stakeholders, including prospective and committed customers, vendors, managers, executives, shareholders, and the community at large. Finally, the response needs to recognize the realities of the organization, the culture, the change process, the organizational power structures, and the barriers to success.

To put it another way, the organization needs to make sure that every employee is brought up-to-speed as fast as possible and is capable of being productive as early as possible. From there, the employees need to be current with the appropriate information, optimized in their ability to execute, up-skilled as needed, and mentored onward to expertise. Finally, the experts need to be supported working alone or together to innovate and advance new knowledge and to mentor the practitioners. Of course, there are other parts of the total picture, including hiring and retention, but here we're focusing on talent development—a perpetual need the CxO needs to know is being taken care of.

In what follows, I attempt to lay out what needs to be taken care of: the concept, some alternatives to current thinking, the coarse steps, and some of the implementation considerations. The goal is to equip you with the frameworks you need to ensure that you are meeting the organizational needs.

THINK DIFFERENT

As the old Apple advertisements exhorted us, we need to "think different." We need to think about the full spectrum of performance support, not just courses. We need to think about how people really solve problems. We need to think about the different stages of learning and what sort of support they need. And we need to think about how to wrap that support across learners, contexts, tasks, technologies, and more.

PERFORMING IN THE WORLD

The goal here is to think of performance needs. A colleague asked if there were a model of informal learning, and I was reminded of the following model from hermeneutic philosophy. In this model, people generally act in well-practiced ways when they can. However, sometimes we have a problem, that is, something we can't solve with our existing capabilities. At that point, we have a breakdown and have to go into active problem solving, or *repair*, to deal with it. If we do successfully remedy the problem, we

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can reflect on the solution and learn so we'll know how to deal with a similar situation in the future (see Figure 1).
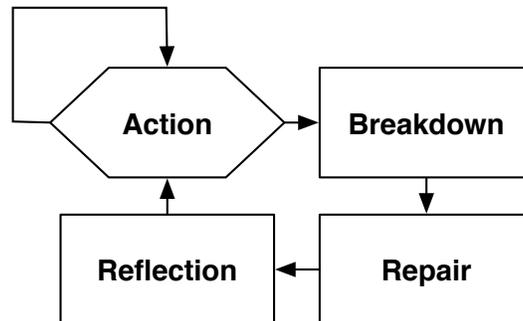
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Figure 1. Acting in the World

For example, imagine you are driving with a friend to a local mall. You are perfectly capable of holding a conversation with the friend while driving since you know the way. Now imagine that you come across some road construction that means your usual path is not available. You have to go into active problem solving and figure out another way to get there. At this point you might be discussing the problem with your friend, but you can't drive on autopilot until you've chosen an alternate path. Once you figure out an alternate path, you might well be able to continue the conversation while you drive this new path. And you might note that until the construction is done, this new path will be your future driving path (or you might figure out a more effective one).

This framework provides guidance for thinking about how to support people in performance (see Figure 2). Briefly (I've covered it in more depth in Quinn, 2004), the notion is that at the initial problem, we have a performance need. If we cannot find the answer, we will have to actively problem solve. If we *do* solve the problem, we should capture the answer so others won't have to also solve it. In more detail, we might ask a person, or look it up, or (if we recognize it's a major new skill need) we might take a course. Note how small a role courses play in the overall solution space.
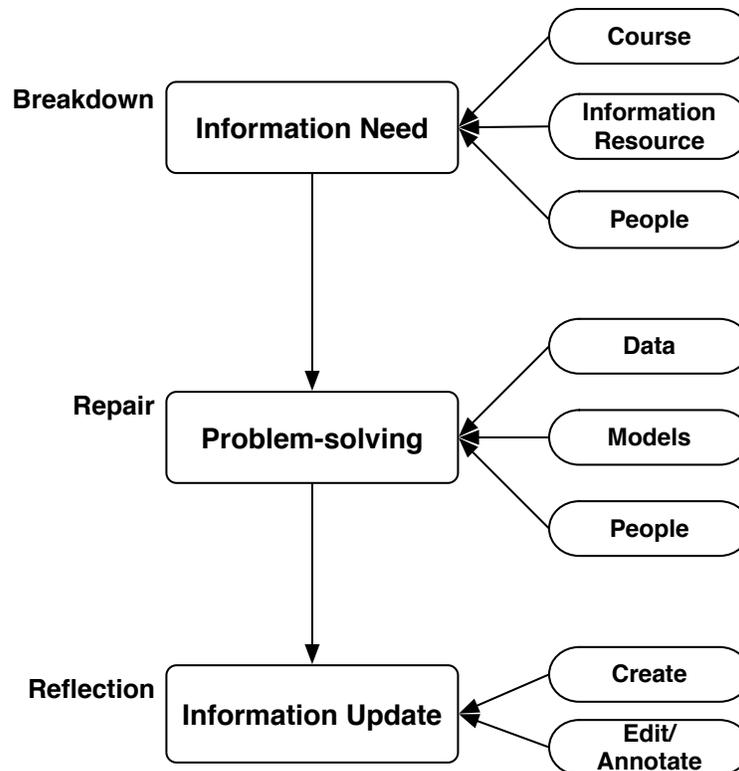
Figure 2. Supporting Real Performance

Now, if the answer *doesn't* exist, then we must find a solution. In this situation, our support needs differ. We might need data to look for patterns that can help us solve the problem. We might need someone to help us. Experts with the answer are not available (or we'd have found them at the first step), so we might need a peer, a process facilitator, or a data expert. And we might need models or frameworks to solve problems (like this diagram).

Finally, if we find the answer, we should populate the resource space with it for others to use. We might edit an existing resource to update it or create a new one.

THE EXPERTISE LADDER

Another way to "think different" is to think about how learners transition from unknowing to expertise. Learners start as novices, needing formal structure, including foundational knowledge as well as motivation and skills. As they become practitioners, they take responsibility for their motivation and are

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looking more toward being kept updated. They may need performance support, but can learn from expert

presentations without needing full instructional design; however, they likely will benefit from mentoring.

Finally, they can become experts and assist practitioners while innovating new ways of doing things,

alone or in conjunction with others. This process applies independently to each discrete area of

competence. So while an individual may be an expert in, say, engineering, that same person may be a

novice at management.

The relative roles of formal and informal learning change across dimensions of competence (see

Figure 3). Novices need full courses, while practitioners benefit from professionally designed information

resources and also expert presentations and mentoring, and experts will benefit mostly from conversation,
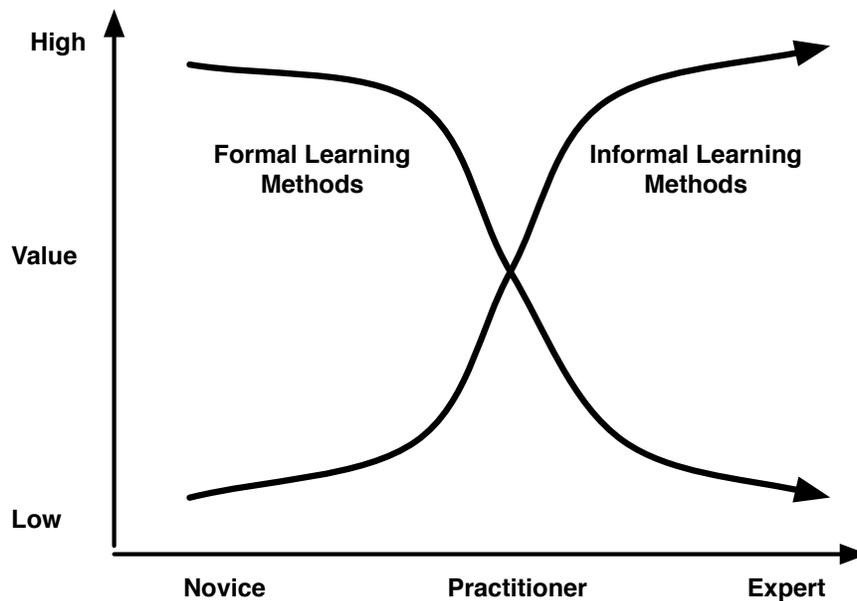
collaboration, and experimentation.

Figure 3. Informal/Formal Relevance

Increasingly, the "task" is not just performing predetermined activities. New tasks will be about

innovation: solving problems with existing solutions and designing new ones. Individuals will be devising

new procedures, practices, and products. They will be creating new possibilities.

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The Total "Customer Experience"

Another perspective to consider is thinking about meeting the complete needs of our audience, not only cognitively, but also emotionally, and throughout our relationship with them from the beginning. *The Experience Economy* (Pine & Gilmore, 1999) tells us that we have to create a coherent experience from initial contact and maintain that experience through the purchasing process, the hands-on experience with the product/service, and into post-sales support.

So, increasingly, we are seeing company websites including not only product and purchasing information, but after-sales support. If you buy a smartphone, for instance (a phone with web, e-mail, personal information management, etc.), you can typically go to the company's site and get everything from quick reference guides to full tutorials to help you get full use of the device. If your concern is not met, there are escalation paths to talk to a real person. There is market recognition that selling solutions is the way to go and that a long-term relationship is far superior to "fulfill and forget."

Note that this does not mean you need to institute full concierge service (though, depending on the market placement of your product or service, it may be appropriate). On the contrary, people happily self-help if good resources are available; most of us would rather find the answer than have to negotiate a phone tree. If you provide a well-designed suite of resources synthesized together to create a comprehensive solution and have an obvious and elegant escalation path, you may reduce your overall support requirements *and* build a happier customer!

I want to suggest that this focus goes beyond what we provide for our organizational customers and similarly applies to our partners and internal customers. We should be looking for ways to assist people in every stage of their activities, in every facet of their relationship with the organization. We need to empower people up the learning path to where they're contributing optimally to the organization and being contributed to optimally *by* the organization.

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Ultimately, the individual experience should be focused on doing what the individual wants to accomplish, in an engaging manner, with streamlined support. Ideally, the environment becomes invisible! Retention is cheaper than recruitment, and accelerating useful performance is to the benefit of the individual and the organization.

MEETING *ALL* THE NEEDS

The goal is what I term a *performance ecosystem*, a full suite of content, resources, media, connections, communities, and more, that meets the organizational learning, information, knowledge, and performance needs. A suite that considers the different needs by user—their role, their tasks, their capabilities—and delivers optimized suite of capabilities (see Figure 4).
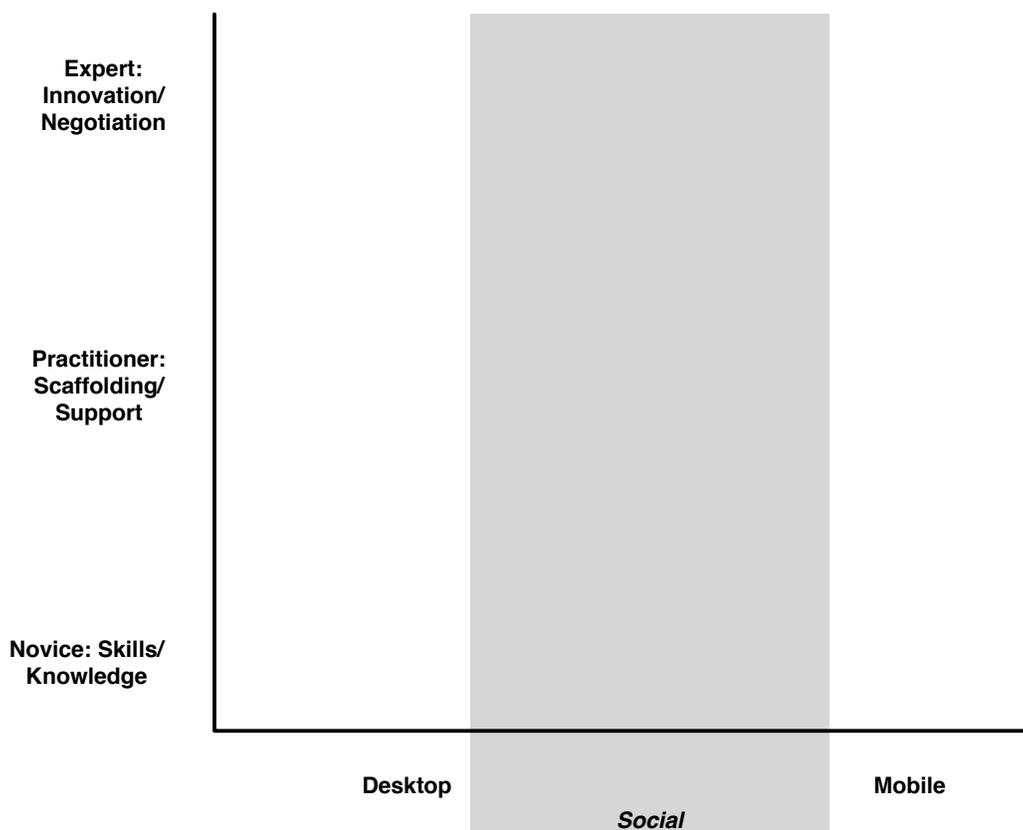
Figure 4. The Performance Ecosystem Space

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The model I find useful is to first think about the levels of expertise (novice, practitioner, expert) and the delivery environment (desktop, mobile). Then I layer a consideration of individual or social interaction on top of that representation. This framework serves as a tool to evaluate the role of different technologies, but the goal is not to put all the technologies into play. It is, rather, to consider whether all needs are being met in *some* way. To do that, you need to implement a variety of solutions.

Now, this also includes much more than just technology resources. Considerations include the organizational learning culture, the company mission and objectives, and all the stakeholders. It is clear that achieving support for all performers is a desirable organizational goal.

ROADMAP OR ROAD KILL

What has not been clear is how you systematically go from individual e-learning initiatives to an environment populated with resources supporting the entire performance need. One of my partners, Knowledge Anywhere, had been regularly helping clients with their e-learning needs. Those clients crossed a number of different content and performance areas—manufacturers and services organizations, medical, financial, and IT—but shared in common the situation that after using e-learning for a number of years, they wanted to take their technology-supported learning to the next level. These clients were looking for assistance in making three- to five-year plans for growing their e-learning strategy.

Participating in these engagements, I realized that there was a systematic path that built in structured ways from initial uses of technology to more fully meeting learning needs. I saw that there were three common entry points and that organizations typically exercised these three types of initiatives without having them work together and without the necessary process support. Ideally, the goal should be a way to go from an initial e-learning step through a systematic process on the way to the performance ecosystem.

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Executives need to hear that e-learning initiatives are part of a larger strategic plan wherein each tactic contributes to a unique need and work together to create a whole that is greater than the sum of the parts. They want to know that you have a plan that broadly meets the organization's needs and does it in a way that's effective and efficient. It does not all have to be done at once, but it has to start from a solid foundation, be aligned to business goals, build systematically, and meet the requirements while mindful of resources.

THE TACTICS FRAMEWORK

Let's now consider e-learning tactics and how they might create an overarching strategy. For each tactic, I will provide a definition, present an example, and discuss some representative technologies and their uses. Finally, I will review the benefits and the costs associated with each tactic.

As a map for discussing tactics, we have two dimensions: (1) increasing elegance of concept and design and (2) increasing technical sophistication. We'll move systematically from basic tactics to the implementation of a comprehensive support environment. Some of these tactics will be familiar and some may be new. Realize that organizations may start at any one of several different points and may have different initiatives determined by different business units. While the ultimate goal is a coherent system, understanding the parts and their relations is a necessary step.

GROUND ZERO: E-LEARNING

I begin, as do many if not most organizations, with traditional e-learning: either an asynchronous online course or a synchronous web-delivered training event (see Figure 5). The typical approach is a presentation and/or a PDF either rewritten as content with added quizzes or delivered as a presentation online using chat rooms for comments.
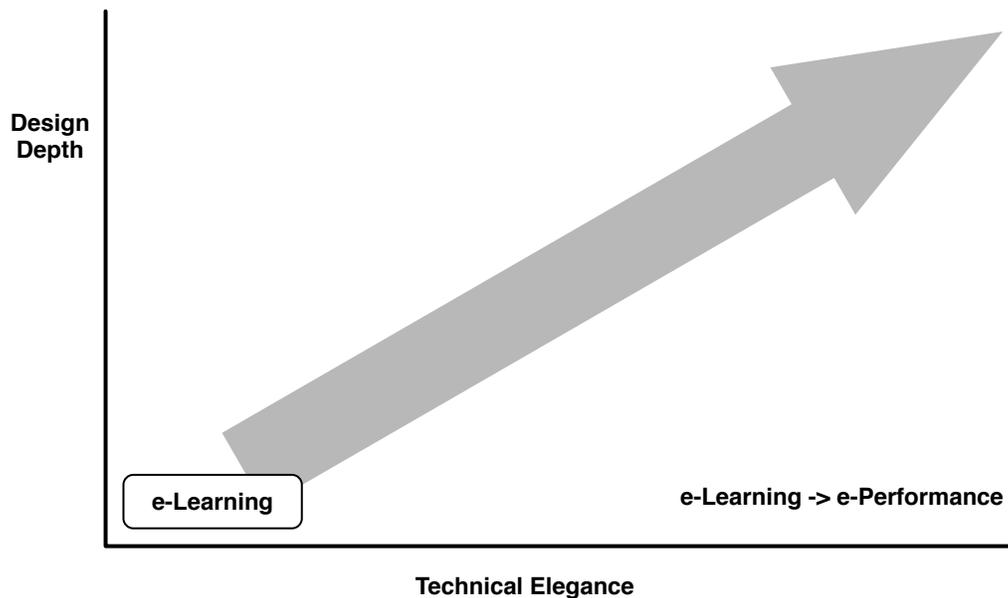
Figure 5. Level 0: e-Learning

The asynchronous learner experience is to go through online content, which can be text and graphics (diagrams, images), possibly augmented by audio, animation, or videos. Various interactive activities such as quizzes or drag-and-drops are used to assess understanding.

The synchronous experience is quite close to what you would experience in a classroom. Typically, there are presentation slides with audio of a presenter and polls. Learners can participate through chat channels. There may be augmentations, including video of the presenter and/or participant use of audio and interactive tools such as whiteboards.

There are good reasons to use e-learning. Organizations can save travel and accommodation costs, minimize time off task, and ensure reach to most everyone. Another benefit is the ability to achieve consistent standards of quality. e-Learning, done well, has some real potential.

Unfortunately, too little of our e-learning is done well. The widespread move to e-learning has frequently led to its adoption without a proper understanding of how e-learning differs from other forms

of training. e-Learning is often employed with a limited understanding of the critical components of good instructional design.

Do any of these sound familiar? Stock photos. Gratuitous animation. Gratuitous interactivity. Overly dense prose and text-heavy screens. Knowledge dump. Rote knowledge tests. Abstract presentations. No motivational or emotional impact. The truth is, most current e-learning is not a pleasant experience.

The consequences are bored learners, insufficient outcomes, and learner avoidance. The obvious next step is to create e-learning that actually reflects what we know about learning.

LEVEL 1: ADVANCED ID

Early in my book, *Engaging Learning: Designing e-Learning Simulation Games* (Quinn, 2005), I talk about deeper instructional design, melding the emotional components of the learning experience with the cognitive components, and that is what this tactic is fundamentally about (see Figure 6). It is *not* about just applying templated instructional design, but rather deeply knowing the underpinnings of learning that provide guidance about how to make the individual elements of instructional design (concepts, examples, practice, etc.) reach their optimum effectiveness.
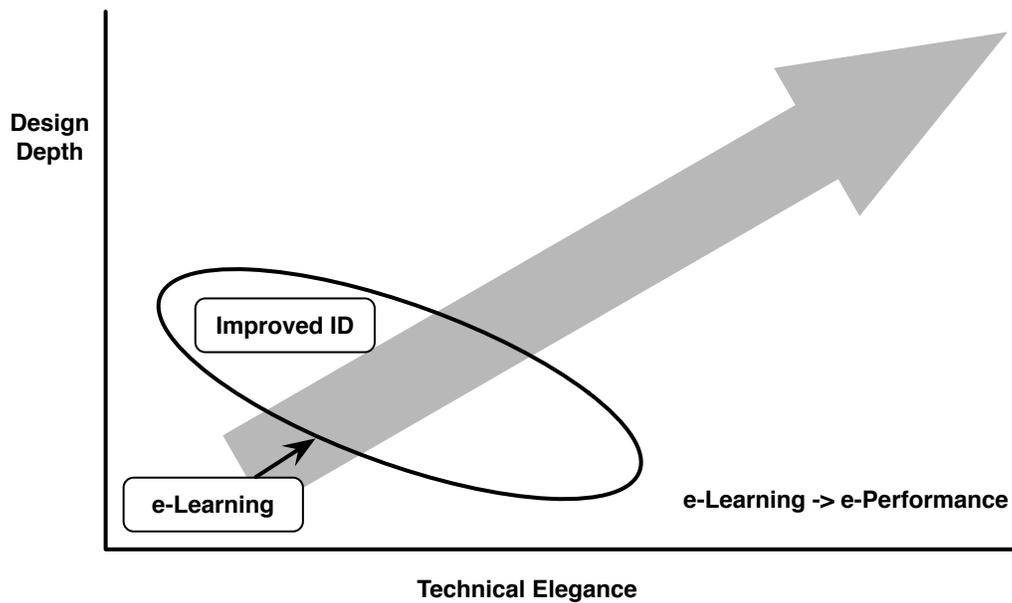
Figure 6. Level 1: Advanced Instructional Design

I don't intend, here, to repeat the elements of deep learning design, as there are other sources such as my white papers, *Seven Steps to Better e-learning* (Quinn, 2006a) and *Making It Matter to the Learner: e-Motional e-Learning* (Quinn, 2006b), or our own editor's *Michael Allen's Guide to e-Learning* (Allen, 2002). The point is that you should search out and apply the principles that make learning work, both cognitive principles and emotional ones.

Instances of advanced instructional design, include using immersive learning simulations (aka serious games) for deep practice or even branching scenarios; using a learning management system (LMS) to track learners; and identifying core competencies needed, designing appropriate assessments, and aligning content development to the assessment. Technologies include the LMS itself and more powerful authoring tools that support more meaningful interactions.

The benefits, of course, are instructional interventions that really work, better return on investment, better organizational performance, and so forth. The costs are a more focused investment in e-learning quality, the appropriate technologies, and process. It takes more work to do it right, but it really

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is worth it. Of course, both this stage and the last only address full skill-set shifts, which target novices.

There are other performers to be concerned about.

LEVEL 2: PERFORMANCE FOCUS

Advanced instructional design improves course effectiveness, but there are other learning needs as well.

The practitioner has different performance requirements than the novice. As learners become

practitioners, their goals change, their motivation rises, and they no longer need the full packaging of a

course. Practitioners can make do with information updates ranging from email announcements to

presentations by subject-matter experts (SMEs). They need aggregated self-help resources, not learning

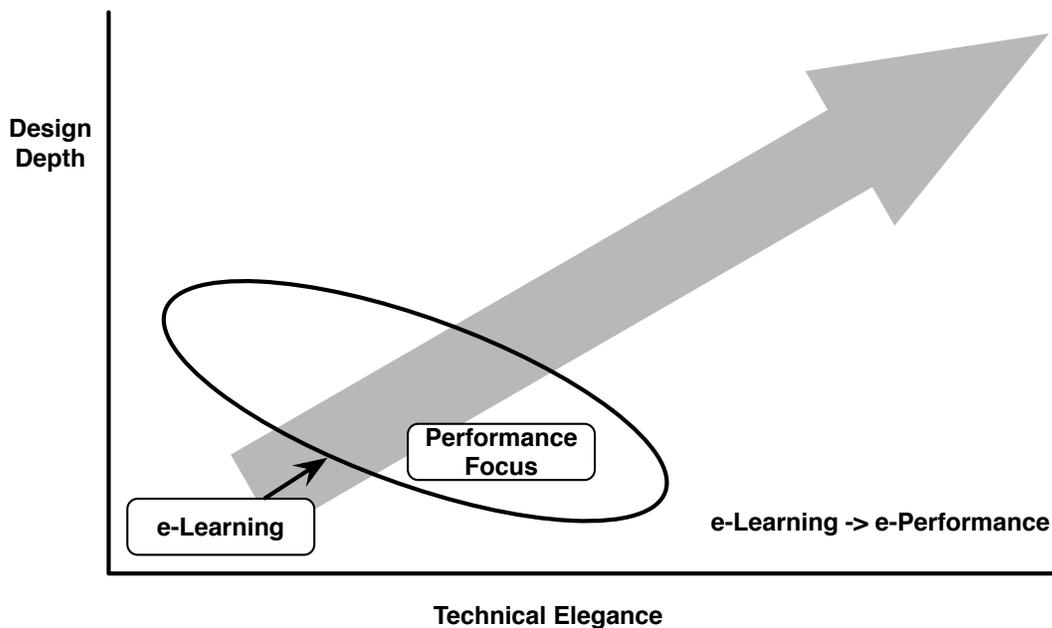wrapped with motivation and foundation. They need performance support, not courses (see Figure 7).

Figure 7. Level 2: Performance Focus

In this model, a focus on performance is represented at essentially the same level as advanced

instructional design. Here I am largely talking about *portals*, websites with resources, links, and tools.

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They are not just LMS with courses (although they can include courses), but instead include any and all types of support around a topic or task, including documents, presentations, and job aids. They typically are created and supported by units within the organization, such as an HR group's suite of information and tools about benefits, procedures, etc. And the fact of the matter is, performance focus is another entry point to technology strategy; some organizations will have implemented portals before they've implemented e-learning.

A performance focus requires supporting the ability to *do* and matching what humans do well with what technology does well. For instance, people are bad at remembering arbitrary details, but good at pattern matching. Technology is typically the reverse. Consequently, performers shouldn't have to memorize arbitrary details, but instead be able to look them up. It is typically not worth dedicating a whole course to the purpose of helping people memorize details they'll soon forget. The information instead should be made available when and where it's needed. So, for example, when a company releases a new process to replace an old one, many times the update addresses only a few features or new specifications. Many tasks, particularly infrequently performed but very important tasks (like making changes to benefits packages), are typically supported online.

Portals are the technology we typically see at the performance level. The portal itself may host various technologies for interactive aids such as automatic configuration tools, but it is the portal availability itself that is at issue here. As an aggregation of information resources, an important component of portals is their designed usability, including navigation and search features. Two common problems are multiple confusing portals and bad portal design.

Frequently in an organization, there is an unclear distinction between multiple portals and what information can be found in each. Consequently, mythologies develop around which portal is to be used when—a confusion further confounded by varying practices among different business units or

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geographically dispersed business units. The consequences are ineffective use of these resources, and performance suffers.

Also, all too often, portals are designed with a simple navigation structure that represents only one way of thinking about the content and user goals. Good portals not only anticipate the variety of needs users may have and provide several navigation mechanisms, but also include a search capability.

A step above portals are performance support environments (Gery, 1991), where the system actively provides information at the point of need. Task-specific performance systems wrap custom guidance around existing application software. Examples include information systems that support call center personnel. With greater initial investment, performance support can pay off when there are large volumes of information, high personnel turnover, or heavy costs on errors.

The benefits of well-designed portals that make the resources individuals need available on demand or even in context are better performance outcomes and reduced training costs. The costs are developing the resources and making them available in a unified way.

At this point we have defined effective aids for novices through advanced instructional design and for practitioners through a performance focus. What about our experts?

LEVEL 3: E-COMMUNITY

Expert needs are inherently different. Experts do not need courses; they *are* the source of information for courses. They do not need standard information; they generate it. What they need are ways to continue to advance and innovate. Given that innovation is typically *not* individual, what they need is collaboration, and that is part of what e-community is about (see Figure 8). It is not just one-to-one discussion, but also the ability to collaborate regardless of time and/or distance, including both linguistic (text, voice) communication and visual/spatial representations.
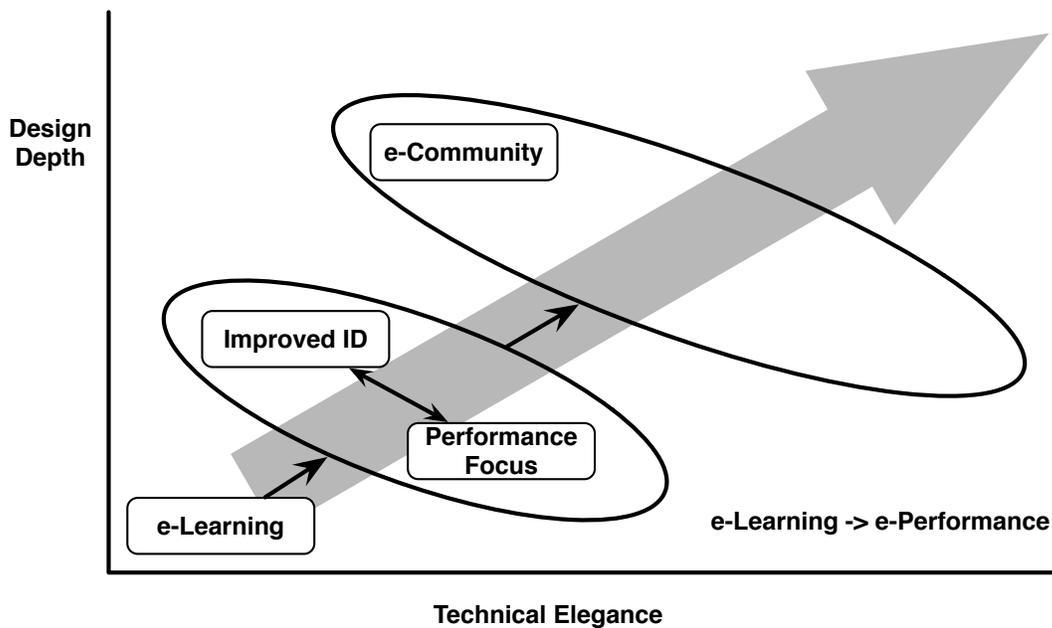
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**Design
Depth**

e-Community

Improved ID

**Performance
Focus**

e-Learning -> e-Performance

e-Learning

Technical Elegance

Figure 8. Level 3: e‑Community

Tools already in use include email, instant messaging, and phone, but there are some new and exciting

tools too. Sure, we can email diagrams around, but we can do more. With blogs, we can share our

thoughts and pictures. Others can track new additions and comment on them. With wikis, we can

collaboratively edit web pages that track our thoughts. And there are even collaborative drawing tools

whereby another person can edit your diagram and vice‑versa.

In our excitement with the new technologies, however, we shouldn't abandon proven tools such

as threaded discussion lists and online conferencing. While web‑casting tools allow formal learning

events to transpire, they can also support more interactive communication at a distance for a group.

John Seely Brown and Paul Duguid (2000) laid out the case for community learning in *The Social

Life of Information*. They tell the story of the community that was developed for and with Xerox

technicians and the positive consequences. There's a cautionary tale, however, about how Xerox tried to

package and sell the solution and failed. Although tools are valuable to allow groups to collaborate,

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discuss topics, and negotiate knowledge, creating an effective e-community is not as simple as installing a package and having a ready-made solution. Learning communities need nurturing, too.

A whole category of web-based sharing and annotation resources is emerging that allows individuals to share media. Under the rubric Web 2.0, people are using web-based applications to work, play, and learn. Tools such as Flickr allow you to share photos. Digg or Del.icio.us let you share URLs or web resources of interest. You can let people know what you're doing with Twitter and contact them almost immediately for a text, audio, or video chat with Skype. Basecamp lets you share your project goals and update status collaboratively. Google's suite of applications includes Docs and Spreadsheets so that you don't even have to email files in order to share them. Gliffy is a web-based collaborative diagramming tool. Teams no longer use email (too slow) and phone (too clunky and expensive), but instead dynamically communicate with Web 2.0 tools to stay abreast of each other, collaboratively solve problems, create new understandings, and get work done. And there are more capabilities being delivered all the time.

This is before we even start talking about mentoring or coaching. While mentoring and coaching can be done through phone and e-mail, it is now feasible to get new members up-to-speed not only by being able to review past materials and records, but also by watching as work is done, sharing, contributing, and obtaining feedback—regardless of distance.

The upside is empowering teams to work together better regardless of time and space barriers. The downside is the time, cost, and effort to put tools in place, equipping the employees to understand them, and scaffolding their use of them, individually and collectively.

LEVEL 4: BROADER DISTRIBUTION

Once we have the rich resources described above, it would be an unfortunate limitation if they were only available if you happened to be sitting at a desktop. Estimates of the size of the mobile workforce range

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from 20 to 40 percent of the total workforce, depending on how you define it, but the trend is definitely

growing. We need to accommodate, not ignore, this workforce. We want to do two things: we would like

to allow our learners to use time that's convenient for them, and we want to support performance even

when workers are not tethered to a desktop. This requires mobile learning or *m-learning* (see Figure 9).
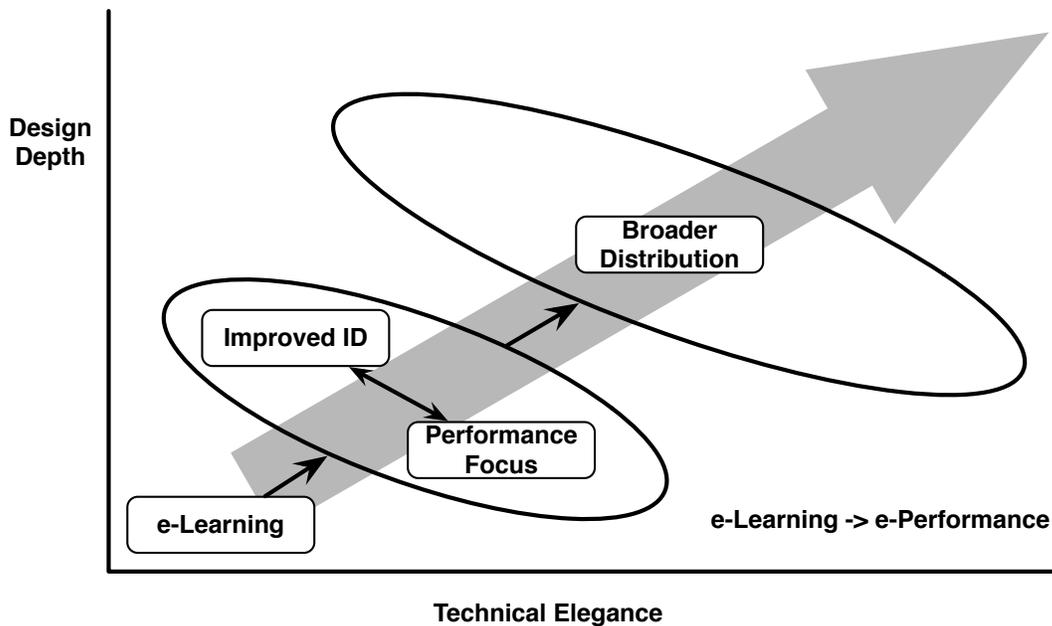

Figure 9. Level 4: Broader Distribution

I've written about mobile learning before (e.g., Quinn, 2000b, 2007), and at core it's about three

approaches: a *reactive* approach—repurposing what we already have for mobile delivery; a *proactive*

approach—designing new tools to specifically meet mobile needs; and a *context-sensitive* approach—

using information about where or when a learner is or what they're doing to more closely match support

to need.

For example, reactive steps include making documents and PowerPoint files available as PDFs to

be downloaded onto mobile devices for delivery, or recording whitepapers for listening while driving.

The latter case was remarkably successful for a firm's engineers to stay up-to-date with their peers' latest

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innovations. Proactive steps include creating some course augmentation materials to extend the learning experience, such as I did to add quizzes, scenarios, and a performance checklist to support a pre-existing instructor-led course on negotiation. Proactive steps could include making an expert contact list available to call or IM while on a site-visit (it's not just about content, but also about communication). Context-sensitive steps include swiping a bar code at a location to obtain specific information about the particular device and its previous history.

The point here is not to detail the mobile design process, but instead to start thinking about mobile communication as a performance support option. Learners *have* mobile devices, even if they are not provided, and learners may be quite willing to use them. Of course, it is easier if organizations provide the mobile devices (standardizing the platform), but they will have the devices regardless, and if there is real value, employees will use them. Most cell phones have Internet browsers, for example, so even making resource pages mobile-accessible is an opportunity.

The technologies are many, including PDAs, cell and smart phones, media players (audio and video such as MP3, iPod, and DVDs), and even handheld game platforms. The associated technologies are conversion and compression software, making small videos, taking captured audio and slides and making them available, and so forth.

Note that it typically is *not* about putting courses on mobile devices, but is instead really about using these increasingly ubiquitous devices as mobile performance support. The benefits of mobile learning are increasing the effectiveness of the mobile workforce and increasing the convenience for all. Media conversions extend the reach of learners and accommodate their varying learning modality needs and preferences. The costs require some forethought, systematicity in content production, and making use of more available channels. The overhead here is not too high; certain steps taken in your content development can make reuse for mobile delivery much easier.

LEVEL 5: GREATER INTEGRATION

This tactic both empowers the previous tactics and sets up new capabilities. Once we recognize that our portals, resources, and e-learning should be working together, as should our resources and our e-learning, we need to start looking at coordinating the content development process and turning it into a managed and efficient process. At core, this means so-called *single-sourcing*, writing once in a way that populates a variety of different types of resources and works with a variety of different channels (such as mobile). The intention is to more tightly integrate the processes of information generation and dissemination (see Figure 10).
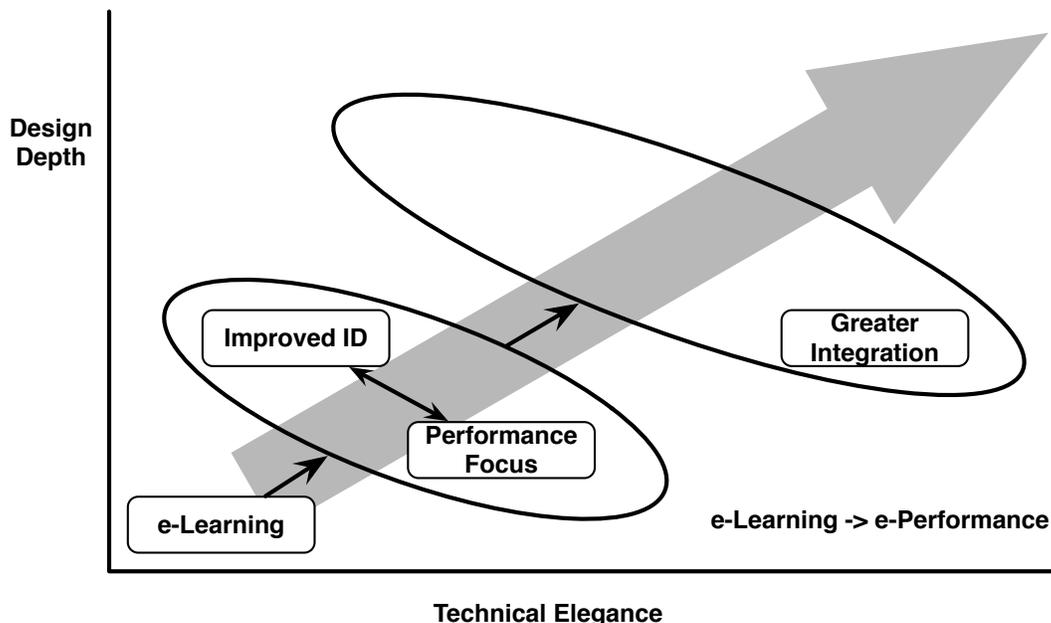
Figure 10. Level 5: Greater Integration

There are several steps here that make sense. The first is to more tightly integrate the curriculum, such as writing courses in the context of other courses. For instance, many organizations have sales training and also product training, and the product training does not reflect the sales process and the sales training doesn't reflect the way products or services are aligned to the market. Cross-linkages strengthen both

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learning experiences and allow them to be shorter and more focused. This does not require any more

technology than that already in use, but it does require greater cross-organization coordination, and it

makes each change in one have implications in other areas.

The second step is to develop content within a development model, such as developing in XML

rather than in HTML. In XML, the content is separated from its display or formatting, so the content can

be reformatted automatically for display in different contexts (on different devices, through different

channels, etc.). In this approach, content is defined in terms of its role, with tags that define parts of a

document such as header, title, and so on. Then, for each delivery you can prescribe appropriate

formatting. So, for example, the title of a document can be reformatted differently for print (using a serif

font, for example) versus for the screen:

Document Element	<Title>This is the Title</Title>	
For Print	Print Title = Bold, All Caps, Times New Roman, 12 pt	**THIS IS THE TITLE**
For Screen	Screen Title = Bold, Caps and Lower, Helvetica, 14 pt.	**This is the Title**

This can be carried further, such as having shorter descriptions for delivery on a small screen and larger

descriptions available on larger devices or on demand. Because XML is extensible, you can extend the

scope to include the tags you need, and there is more advanced support for creating higher-level

structures. DocBook was a particular schema for documentation, but it's being superseded by DITA

(Darwin Integrated Type Architecture) for more flexible uses. Don't worry if you don't get the details

here; the point is to understand the advantages gained and investments required.

By tagging content both in terms of its role (e.g., defining a chunk of text as a short description

versus the longer description) and adding a second layer of semantics (e.g., what it's about, who it's for),

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you can start creating what I term *content models*. Content models provide structure for content

development such as defining the elements of e-learning. For instance, I recommend breaking content up

into learning objects at a level of granularity below a full learning experience (Quinn, 2000a). Instead of

having deliverable objects such as an entire course, you then have separate objects for all the component

objects of a course, such as a separate introduction, concept presentation, example, and practice objects.

You can have even finer granularity, pulling out the separate components of an introduction including the

motivating example, the overview, and the objectives (see Figure 11). This provides the opportunity to

create new types of learning experiences and pull those elements out for performance support uses

(delivering a concept object or an example to someone who is trying to solve a problem).
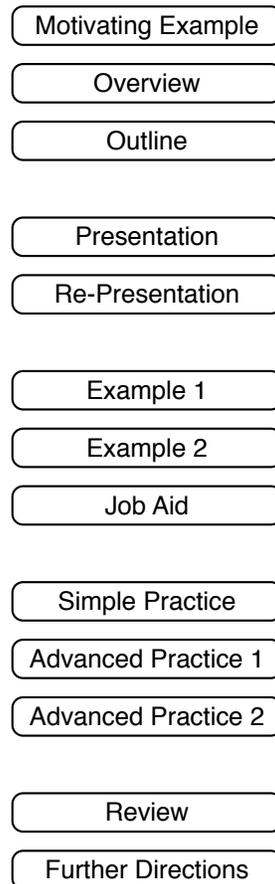

Figure 11. A Sample Content Model

Generating a content model provides multiple benefits, including streamlined content development and custom content delivery (e.g., "pull out the product A35725 marketing features sheet for a salesperson" versus "pull out the product A35725 tech manual for a field engineer"). This also moves performance support systems from hard-coded support to the possibility of support generated "on the fly." The concomitant cost has to look at content development as a cross-organizational process and put in place management and governance controls such as responsibilities and life-cycles.

The tools used include XML editors, content templates, and content management systems. The results are more searchable portals, easier repurposing for mobile and other channel deliveries, capturing output from communities, and efficiency in development. The costs are the cross-organization coordination, the initial overhead in establishing infrastructure, and the learning curve for the technologies.

LEVEL 6: THE PERFORMANCE ECOSYSTEM

The ultimate goal is a fully populated and tightly coupled suite of resources that address individual learning goals and organizational outcomes. Such a resource should scaffold the on-boarding of new employees, the development of existing employees, and the development of new opportunities and innovations for the organization. It's the complete integration of the prior steps into a coherent whole (see Figure 12).
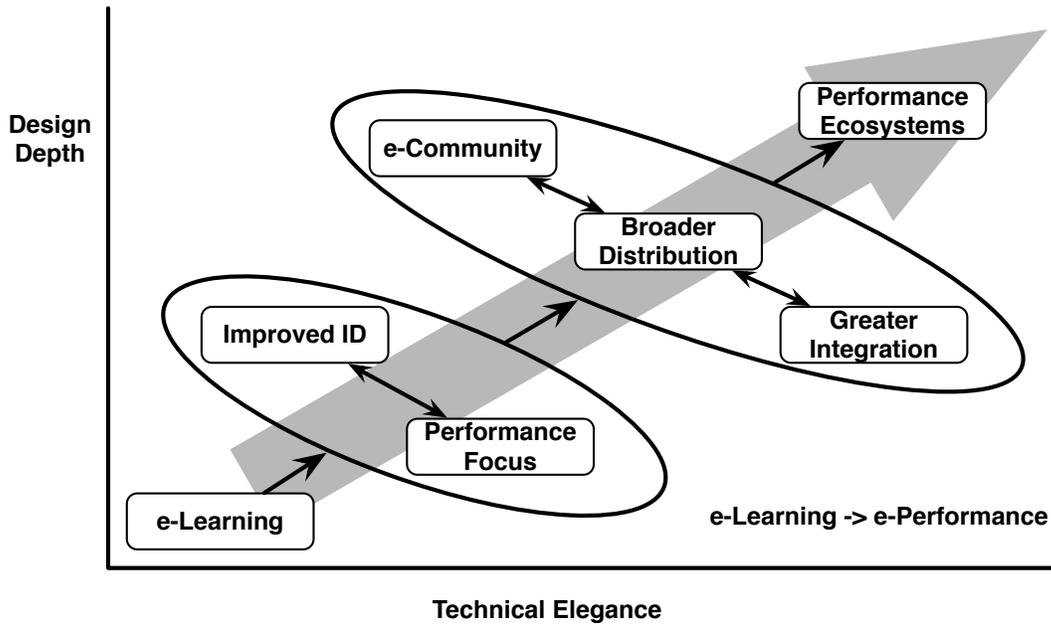
Figure 12. Level 6: The Performance Ecosystem

We can go beyond the mere creation and integration of these elements, of course. Using one of several different approaches, we can customize the configuration for the individual. Using mass customization, as Amazon does, for instance, we can recommend what others have found valuable.

Another step is to start using models to actually customize the presentation for what the learner knows, what his or her role and responsibilities are, and what content is available (see Figure 13).
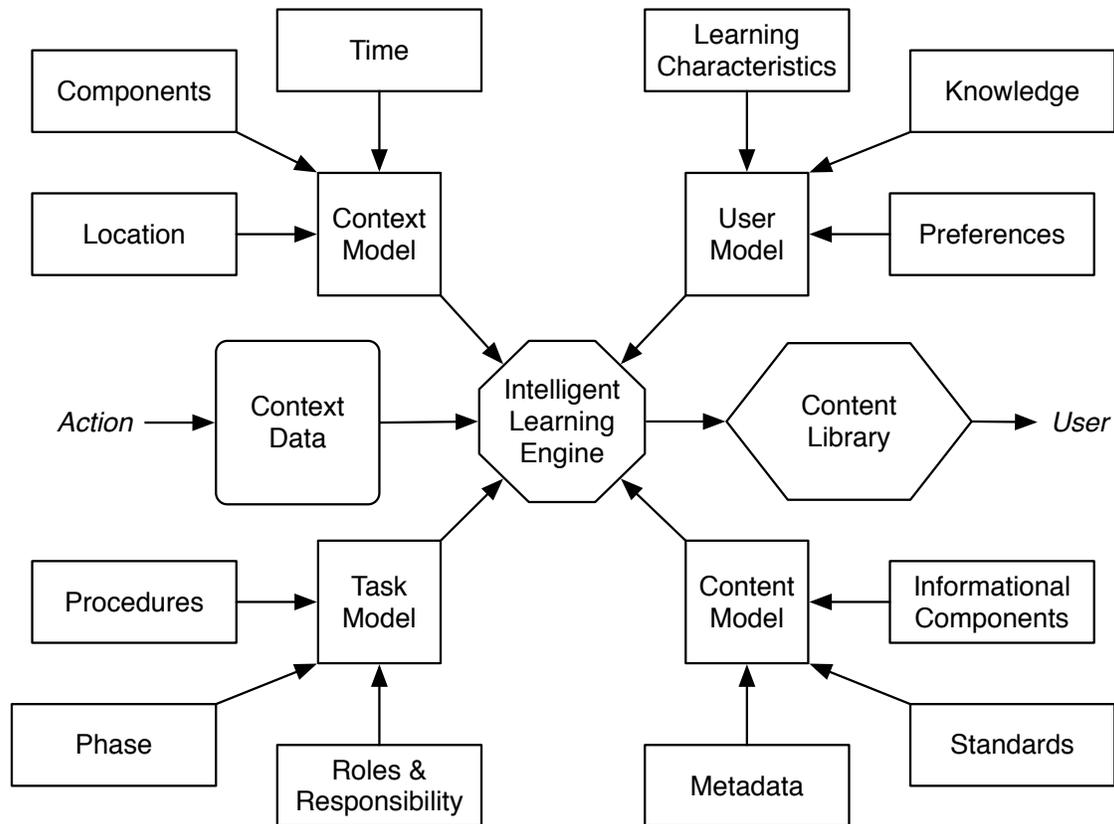
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Figure 13. Model-Driven Intelligence

The technologies needed are integration capabilities. The web services model, another facet of Web 2.0, provides a way to invoke each component so the various components can be linked by software instead of building a monolithic system. This is the system architecture of the future and the framework on which to build an effective performance ecosystem.

The benefits are an optimized environment for individual and group performance with the right support for everyone (see Figure 14). The costs are the development of the component elements, more cross-organizational coordination, and the integration. However, done right, the payoff is potentially huge.
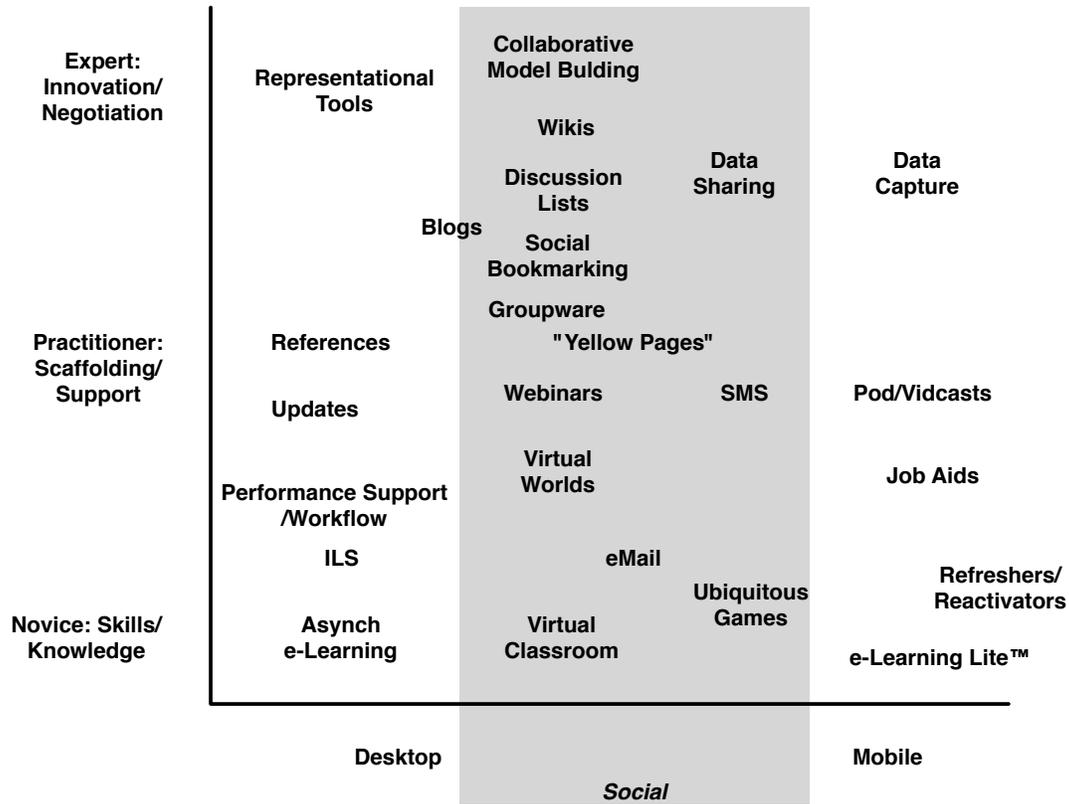
Figure 14. Populated Performance Ecosystem

UP THE ORGANIZATION

What we have is a framework that links e-learning tactics into a coherent whole. Note that as a framework it's not a recipe or a cookie cutter. Instead, it's a guide that requires assessment of the organization's status and goals and customization of the framework to particular contexts.

All this change doesn't happen in a vacuum. There are still the issues of creating a learning culture (Conner & Clawson, 2004), implementing organizational change (Cross & Dublin, 2002), and determining the locus of responsibility. This framework does not apply to front line employees only, but also to customers, partners, management, and executives (e.g., leadership development).

It has been argued before that training (and e-learning) folks are not strategic enough. Moving from a training focus or even a learning focus to a performance focus puts the strategic perspective in place. It's time to think strategically. The transition from an industrial to an information economy is a given. Empowering the information economy is not about information processing; it's about information generation and sharing. At core, it's about learning and doing.

Someone needs to be responsible for assessing the organizational landscape and the business context, developing a systematic plan to create a performance ecosystem, getting the support to execute, and continually evaluate and improve. Do not leave it to chance; seize the initiative, and the day. *Carpe diem*!

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